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INTERMITTENT SPINAL PARALYSIS OF MALARIAL ORIGIN.

BY

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New York.

CASE I.—First attack with nearly complete recovery under quinine in one week; second attack a month later and recovery not complete at end of three months, quinine not being regularly administered; recovery complete within four months after removal to non-malarial locality; third attack five weeks after return to malarial locality, and recovery complete in three weeks under quinine and after removal; fourth attack four and a half months after return home; in hospital again three weeks later, and at end of six months recovery not quite completed; fifth attack six months after discharge from hospital, and recovery nearly complete at end of two months; electricity employed during the last four attacks.

Frank P., aged seven years, was brought to the Out-door Department of the Hospital for Ruptured and Crippled, Sept. 28th, 1878, for a hydrocele. There was observed at that visit a peculiarity in his gait that excited our interest, though no observations were recorded. Indeed, no history was obtained until some months later, when it was learned that he was one of three children, that phthisis and Bright's disease existed in his maternal grandparents, and that his mother was of a nervous temperament. I have quite recently learned from Dr. C. Peck Smith, the family physician, that, for several years, she has suffered quite severely at times with various neuralgias. The father is intemperate.

Our little patient was living in the summer and early fall at 206

W. 32d street, on the first floor of a rear building, and the mother always reported, when asked about hygienic surroundings, that the house was damp and that malarial fevers prevailed in the immediate neighborhood.

In the early part of September, he complained of being chilly, and this feeling was followed immediately by heat and vomiting and general indisposition. He had what she termed a "bilious attack." On the following evening, he seemed to have high fever and passed a very restless night, crying aloud repeatedly, and acting like one delirious. There were no convulsions; his bowels were constipated; he referred the pain to his limbs; in fact he "seemed sore all over," and cried if he were handled. On getting out of bed next morning, he was unable to walk, but could take a few steps after being rubbed. The second night following this, he was feverish again, and in the morning he could scarcely use his hands and arms, crying at the same time from muscular pain. During the succeeding week, he was confined to his bed with a fever; had much cutaneous hyperæsthesia; was at times bordering on delirium; was obstinately constipated, but had no opisthotonos and no symptoms pointing to disturbance of the bladder. He took much quinine at this time. After a week, there was temporary improvement, and he was up for three days, when he fell sick again, and was worse, it seemed, than during the first attack. On the subsidence of the fever, nearly a week later, paralysis of the four extremities was, to all appearances complete. Power returned very slowly. The family physician finally referred him to Dr. Seguin, and the case was exhibited at the clinic early in January. Dr. L. Emmett Holt was then a student at the College of Physicians and Surgeons, and he gave me the following notes which were taken verbatim from Dr. Seguin's lecture: "A peculiar case of infantile paralysis. History: went to bed four months ago well; no symptoms during the night. In the morning, the legs were palsied to the knee. On the following morning, the arms palsied; no other palsy, no head symptoms, bladder normal. Progressive increase in the paralysis and wasting in the paralyzed parts. No anæsthesia (?). Examination: extensors of legs good; extensors of feet show a little power—he slightly moves the toes of each foot; extensors of wrist good, [though] on left side some effort [required]. Paralysis of flexors [anterior tibials] of feet. Some faradic reaction in gastrocnemius, none in anterior tibial [those on left side not mentioned]. No reaction in thenar or hypothenar eminences [galvanic-test not mentioned].

Diagnosis: myelitis of the anterior horns." Dr. S. did not see the patient again.

He was admitted to the hospital Jan. 14th, 1879, and our examination then was as follows: A fairly nourished boy standing unsteadily, and when not supported, with limbs in marked genu-valgum; walks very oddly, balancing himself for a step with apparent effort; limbs widely separated; one foot is then brought forward, coming down to the floor with a flop, after which, as the weight of the body is thrown upon the limb, a genu-recurvatum is produced. The other foot and limb then go through with a like performance. There is a diminution in power in the supra-scapular muscles, in the flexors of the fingers, and possibly in the extensors of the fingers. The thenar and hypothenar eminences are undoubtedly atrophied to a moderate degree, at least. The muscles already mentioned and those to be mentioned are very flabby as one feels them.

The flexors of the thighs are subnormal in form, while the extensors are normal; the adductors seem subnormal, the abductors normal. There is decided relaxation of the posterior ligaments of the knees. Extensors of the legs are paretic, flexors normal in power. The knee reflexes are normal. He is unable to flex the foot, and the power to extend is far from normal; he flexes and extends the toes quite well. The Achilles tendons are contracted so that the feet cannot be passively flexed (dorsally) beyond 90°. The feet are cold. There is no difference in the comparative measurements of the limbs; the circulation is poor. The symptoms in fact are quite symmetrical throughout. The electrical reactions were not recorded. A diagnosis of infantile paralysis with an interrogation point was made, and the treatment consisted in electricity, and apparatus to overcome the contracted tendines Achillis. During the latter half of February, he had a naso-facial erysipelas, and on *April 23d*, it is recorded that decided improvement in the paralysis has taken place. The apparatus has been discontinued since he walks very well without any support. He is now able to button his clothing; this his mother thinks a decided improvement. No medicines have been employed save those used for the erysipelas. *June 4th.*—Within the past six weeks, the progress toward recovery has been unmistakable. His gait is nearly perfect, and he executes all the movements of the feet without apparent effort and with nearly normal power. He uses his hands well, and the degree of improvement casts a shadow of doubt over the diagnosis, at least from a pathological stand-point. The electrical reactions, both currents,

in all the muscles, are about normal. *July 11th.*—He was discharged and a very thorough examination was made, comparative measurements being taken of both upper and lower extremities without any difference whatever in size. The thenar and hypothenar eminences had become fuller. The individual groups of muscles were submitted to all the usual tests, including both currents, and full notes made, although negative in character. I do not propose to transcribe them here, but simply mean to say that the boy left the hospital *cured*, and went back to his home in 32d street.

Aug. 25th, 1879.—Readmitted this date. Since his discharge, he has continued well until three days ago. On the evening of the 21st, he went to bed complaining of being cold, and extra bed-clothing did not succeed in keeping him warm; he was restless throughout the night, and towards morning he was feverish, keeping his bed until this morning. Every night he has complained of being cold, though seemingly feverish. He has likewise complained of pain in his legs, has had no appetite, has had nausea, but no vomiting, and his bowels did not move from the *21st* to the *24th*. He had an action yesterday evening, and a remission of his symptoms followed almost immediately. The patient is very irritable, and is so weak in his limbs that he has to be carried into the hospital. This attack closely resembled that in September last, the mother reports, the difference being that this is less severe.

It is learned that, for several months before his first attack, he lived in a house on the same street, between Eighth and Ninth avenues, in which a sewer leakage was afterwards discovered, the family moving out as a consequence. It is learned, also, that a woman in the same house had what was called malarial fever, and recovered only after she had moved away. There were no other cases in the tenement.

The muscles of the arms, *Aug. 27th*, respond vigorously to a strong faradic current, equally well on both sides; the muscles of the forearm scarcely perceptibly to the same current slowly interrupted, the flexors responding a little better than the extensors. It is doubtful whether the muscles of the hand respond at all. When the positive pole is placed over cervical spine and negative over dorsum of forearm, the flexors react, while the extensors do not. The galvanic current gets the reaction in same muscles not quite so vigorously, with poles similarly placed. The electro-sensibility is about normal. The muscles of the lower extremities react in the same way as those of the upper extremities, with this

exception: a strong galvanic current gets no responses in the peroneals, while the faradic gets response barely perceptible. He was ordered quinine and faradism.

Sept. 17*th.*—To all appearances completely restored. Cod-liver oil ordered in addition to the quinine, which has been given in about gr. iv. doses twice a day. This was discontinued two weeks later, and he would have been discharged but for the occurrence of a glandular enlargement in the axilla. This disappeared spontaneously, and on *Nov.* 14*th*, at noon, he had a slight chill followed by headache. Unfortunately his temperature was not taken. He was not in a good condition of health, and he remained in the hospital until *Feb'y* 6*th*, when he was discharged, there having been no return of the chill and constitutional disturbance of any kind. He was examined with much care, and found to have made a complete recovery.

June 25*th*, '80.—During the past three weeks, he has been getting weak again; he falls easily, is very weak at the knees, and has not power this morning to flex either foot to 90°, though they can be forcibly flexed to the full extent. He is living at the same place, and about a month ago he was sick for a week, having a chill every other day. He is now ordered quinine gr. iiss. t. i. d. There does not seem to be any elevation of temperature, and the thermometer is not employed.

July 19*th.*—Again admitted to the hospital, helpless and crying with pain in his calf muscles and in the soles of the feet. There is complete palsy in the anterior tibial groups, and no reaction to a very strong faradic current. It takes quite a strong current to get any reaction in the posterior tibials even. The galvanic test is not employed, battery not being in working order. The extensors and flexors both of the thighs and legs seem not this time to be at all affected. He cries all the afternoon with pains in the lower limbs, and asks that they be rubbed, which being done, gives him relief. His tongue is coated, and his vital signs are 120, 26, and 102°. Next day, in the morning, his temperature was 101¼°, and in the evening 101½°. Quinine is ordered gr. iv. t. i. d. On the next day, 21*st*, he keeps his bed, lying on his left side, with thighs flexed on abdomen and legs on thighs. Face is flushed, and he passed a bad night, *i. e.*, he cried much with pain in his limbs. His temperature in the morning was 101°, in the evening 101°. No relief came next night until ʒ i. of the U. S. sol. of morphia was administered. On the following day, continuing quite helpless, the fluid extract of ergot, ʒ ss. three times a day, was added to the quinine. In the evening, his temperature was

99½°. On *July 23d*, it is recorded that he is crying with pain in his limbs, and on the *24th* he was more comfortable, though constipated. There was no elevation of temperature worth recording from this time forth, and the quinine was discontinued. He soon began walking about again, feebly, however; the knee phenomena could not be obtained, and the reactions to faradism were very unsatisfactory. Indeed, at times, no reaction could be had at all. A month later, one day in September, I had a call from my friend Dr. Putzel, and he tried faithfully to get reaction in the anterior tibials, failing most signally to get any response to either a strong faradic or a strong galvanic. It was not until *Jan. 5th*, '81, that the above muscles reacted to the two currents. The strength was such, too, as to make the application wellnigh intolerable. On the *10th of March*, a much milder current produced reaction. He was discharged this date, and the restoration was complete, with this exception: the small toes of each foot remained in flexion, the tips of the nails touching the floor—"crumpled."

Sept. 28th.—He is walking badly again, typical drop-foot existing. The small toes are still "crumpled," as when he left the hospital, only the deformity is a little more marked. He did not return to the same place, but has been living on Ninth avenue, in a locality presumably free from malarial influences. He has not been sick any of late, and nothing would seem to indicate a return of malarial poisoning, unless the following could be so construed: on the *5th of October* he appeared feverish, there was vomiting, had no appetite, his bowels had not moved for two or three days, his tongue was coated, he had no chill, yet his symptoms led the mother to pronounce this a "bilious attack." He was better on the *6th* and *7th;* on the *8th*, his limbs became weak, and on the *9th* he was not only paretic, but he had much pain in the calves, the pain keeping him awake nearly all night. On the *10th*, he was unable to walk. On the *11th*, he walked without assistance, though experienced much difficulty in clearing the floor with his toes. There is inability to flex either foot. Quinine and ergot are ordered. Dr. Putnam-Jacobi saw the case on the *17th*, and could get "no response to faradic current in the extensor communis, peroneal, or anterior tibial groups, but did [get a response] in the extensor of the great toe, and in the calf muscles." The extensors of the wrist responded vigorously to the faradic current. The doctor excluded anterior poliomyelitis, and after getting a complete history, favored the view I was entertaining, viz., a spinal hyperæmia, probably malarial. The patient was admitted to the hospital for the fourth time on *Oct.*

20*th*, and his condition was similar to that recorded in the other attacks. The paralysis did not involve so many muscles as on former occasions, yet the anterior tibial groups were quite as powerless, and the reactions were quite as difficult to obtain. The small toes presented the same peculiar appearance as when he was last discharged. I have repeatedly examined his gums for the blue line of lead poisoning with absolutely negative results. His anterior tibial muscles on *Nov. 24th* responded to a strong galvanic current, and the peroneal responded to a strong foradic. At present writing, *Dec. 2d*, he has recovered nearly all the power in the muscles that were paralyzed. There is for the past fortnight a desquamation of the epidermis of feet and legs, exactly like that which occurs after scarlatina, and yet the boy has not had any symptoms pointing to scarlatinal poisoning. This desquamation does not occur on any other part of the body. His knee reflexes are normal.

Erb, in Ziemssen,[1] remarks that "the occurrence of purely intermittent attacks of paraplegia and paralysis which, according to all appearance, are of spinal origin, and which make a most striking impression as contrasted with the usual stability of spinal paralysis of similar severity, is undoubtedly one of the most remarkable forms of manifestation of malarial infection," and I agree fully with him when he says "literature contains but very few instances of this form of spinal paralysis."

Hertz[2] makes an abstract of Macario's case[3]

"in which a woman was seized, two days after confinement, without any known case, with formication in the feet, which then spread to the thighs, the trunk, and the upper extremities, these becoming, at the same time, paralyzed and anæsthetized, and her tongue also becoming paralyzed. These manifestations were repeated three times after the quotidian type, and were then arrested by quinine."

Hertz himself has never seen a case. Romberg[4] de-

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[1] Wm. Wood & Co., New York, vol. xii., p. 814.
[2] Wm. Wood & Co., New York, vol. ii., 601.
[3] Gaz. méd. de Paris, 1857, No. 6.
[4] Lehrbuch d. Nervenkrankh., i., p. 752.

scribed a case which is quoted by Erb in his articles, to which reference has already been made.

"A woman sixty-four years of age, after having been quite well the day before, was suddenly attacked with paralysis of the lower extremities and the sphincters. Sensibility was unchanged, consciousness clear, the temperature cool, pulse 80, small and empty, no pain in the spinal cord. The next day there was an astonishing change in the condition. The patient can walk again and void urine voluntarily, and only complains of weakness in the legs. The next morning there was paraplegia again, which had set in at the same hour as two days before. A third paroxysm was awaited, which also set in at the appointed time, although without paralysis of the sphincters. Quinine effected a rapid cure."

Hartwig.[1] also quoted by Erb, relates the case of a vigorous laborer, aged twenty-three, who, five years before, had suffered from a tertian intermittent for a few weeks, but from that time till *Nov.*, 1873, had remained perfectly well and strong. Then he first felt weariness in the legs, this gradually increasing, the arms soon participating. On the third day, he was obliged to take to his bed, and the night following there was complete paralysis of legs, trunk, arms, and even the movements of the head. The muscles of the face escaped, while speaking, breathing, and swallowing were somewhat hindered. The sphincters were uninvolved, sensibility was intact, no head symptoms, no pain. Perspiration was excessive. At the end of twenty-four hours, these symptoms subsided, and in half an hour, generally with an increased perspiration, all the muscles again became movable. For the next twenty-four hours, he had no sign of paralysis, a weariness and heaviness of limbs being all that he complained of. Then followed an attack of paralysis again, and then there followed regular successive free intervals and attacks of about twenty-four hours' duration. The time occupied by the attack gradually extended to forty hours, the interval being much shorter. Under arsenic, the intervals were lengthened to about forty hours; quinine lengthened them at first to four days, then strychnine, hypodermically, was followed by a re-establishment of the tertian type. A few times the sphincter ani was affected. In one of his attacks, at the end of March, he lay completely paraplegic, only the facial muscles acting normally, the flexors of hands and of feet showed a minimum amount of motion, sensibility of the

[1] Diss. Halle, 1874.

skin and muscles normal; pulse, 72; respiration, 20; temperature 99½°. Reflex action entirely wanting, electrical excitability of the muscles almost entirely extinguished (during the intervals only diminished). Greater and lesser irregularities occurred in the succeeding month; quinine lost its power, yet the disease retained its strongly remittent type, and gradually the cachexia became marked, the muscles showed marked emaciation. The final result of the case is not reported.

Dr. Wilkes, in Guy's Hospital Reports,[1] reports two cases of intermittent tetany, in which paralysis, from the history, seems to have occurred, though he does not attribute the attack to malarial poisoning. One patient was thirteen years of age, and the other sixteen. In both of these, however, there were severe muscular spasms.

The literature of malarial poisoning is full of neuroses; and if one attempted to collect all the convulsions, the muscular spasms, the neuralgias dependent on its influence, a paper would swell into a volume. Trousseau, indeed, after discussing the neuroses of marsh fevers, says:[2]

"We may in this way pretty easily explain the very varied symptoms of both simple or pernicious marsh fevers; in this way, confirmation is given to an opinion already held by others, and in which I completely concur, viz., that intermittent fevers, under whatever forms they may present themselves, ought to be classed with the neuses."

There is nothing then to prevent a patient who suffers from malarial fever getting a paralysis almost identical with infantile spinal paralysis, or, more properly speaking, anterior poliomyelitis. The anatomical diagnosis appears to be the same, yet, pathologically, we have, I think, a very different condition. In lead palsy, too, the same region of the cord is affected, and perhaps, also, the same regions are affected in diphtheritic paralysis. The prog-

[1] Vol. xvii., 1872, p. 181.

[2] Clinical Medicine. English Translation. Phila., 1873, vol. ii., p. 695.

nosis, however, differs materially in these toxic paralyses from that in the true anterior poliomyelitis.

It will be seen by an analysis of the case I have just placed on record that his *first* attack occurred in September, 1878, a few days after an intermittent fever, and that partial recovery took place under the administration of quinine within one week. Indeed, when I first saw the patient for a hydrocele, it was on the twenty-eighth of September, and there was nothing noticeable except a peculiarity of gait. The *second* attack occurred the next month, and the recovery was not complete in January, at the time he was first admitted to the hospital. Quinine was not employed, and he did not recover until four months after admission. He was simply removed from malarial influences.

The *third* attack was five weeks after his return home, and he was readmitted three days after its invasion, put upon quinine and faradism, recovery being complete this time in three weeks.

The *fourth* attack, four and a half months after going home, was preceded one month by the usual "bilious spell," and he did not come into the hospital again until three weeks later, when there was considerable sensory disturbance, requiring morphia for several days. It was six months this time before he recovered, although quinine was at first used, and then ergot. Be it noted too that the recovery was not perfect, inasmuch as the interossii were left over, and have not as yet recovered their tone.

The *fifth* attack came on six months after his discharge from the hospital, coming on gradually, and attended, like the fourth, with pain in the four limbs, and improvement was more marked after he came into the hospital, and now nearly two months have passed, and the cure is not complete.

There is this peculiar feature, viz., the epidermal desquamation.

The next case I have to report had three attacks:

CASE II.—Wm. Johnson, aged six years, was admitted to the hospital May 13th, 1880, poorly nourished, head large, and walking with much difficulty. As he walked, the limbs were widely separated, and the toes scarcely cleared the floor. He could not flex (dorso-flexion I mean) either foot, and both unsupported hung in talipes equinus; the thigh flexors were weak, and he made quite an effort to get up from the floor. There was a hyperæsthesia in the inferior extremities, and the muscles felt flabby as one handled them. The grasp of both hands was weak, the faradic reactions in extensors and flexors of wrist being good, yet not vigorous. In the lower extremities, especially in the anterior tibial group, a very strong faradic current got a very feeble response. There was no comparative atrophy, and apparently no real atrophy, of the limbs. The family history was not good, the father being intemperate, the mother being of delicate build, and often out of health. No distinctly transmissible diseases, however, were traceable.

Two years ago, during the summer of 1878, the family were living in 118th street, between First and Second avenues, when this boy was taken suddenly ill one day, complaining of pain in back and limbs, vomited, and his skin was excessively hot. The pain in the limbs passed off next day, but the fever continued, and he was sick for nearly six weeks. During convalescence, his limbs, upper and lower, became quite powerless, and he had no treatment for this but rubbing of the limbs, and bathing them in salt water. He recovered completely within a few weeks, and had no return of malarial symptoms or paralysis until April, 1880. At that time he lived at 336 E. 115th street, and much street-repairing and street-opening goes on constantly in that locality. He began with a feeling of malaise; he had dull pains in his limbs by day, but towards one or two o'clock at night he would awake out of sleep crying aloud and complaining of pains in the limbs. These would leave him towards morning, when, on rising, he would be comparatively well. Febrile symptoms accompanied these pains by night, and his mother insisted that they occurred every night during the latter part of April and the first of May. He gradually lost power in his limbs until he was admitted to the hospital. The treatment was electrical, and apparatus to support feet at right angles. The reactions improved,

he gained power, the apparatus was soon discontinued, and on Sept. 24th he was discharged cured.

In tracing the case out recently, I have learned from both father and mother that he continued well and free from paralysis until last spring, when he was taken in the same manner as in the former attacks, the constitutional symptoms being more severe. He became paralyzed in all four extremities during the first day or two, his bowels were very constipated, and during the second week he had convulsions, but, in the intervals, his mind was clear, and he died simply from exhaustion, he being conscious almost up to the hour of death. The attending physician states that he did not have tubercular meningitis. No autopsy; and hence a good cause pathologically lost to science.

I very much regret that I am unable to find any records of autopsies, and that I must content myself in speculating on the pathology of intermittent spinal paralysis. I cannot help but think that the pathology must be essentially different from that in the ordinary spinal paralysis of infancy. While studying these two cases clinically, I was very much impressed with the symmetrical development of the symptoms, with the symmetrical returns of the same, and even in the study of the cases of Macario and of Romberg and of Hartwig I am still more impressed with the symmetry of the paralysis; in fact, I do not now recall such cases of intermittent poliomyelitis, unless it be Case XX. in Dr. Seguin's monograph on Myelitis of the Anterior Horns. This patient did not make a complete recovery, however, as his left hand remained numb and weak up to the date of his second attack.[1] At one time, too, when I could get no reaction to either current in muscles not much atrophied, I could not explain the nature of the lesion in the anterior cornua. In no instance have I found a typical degeneration reaction, and yet the toxic influence on the nerve-centres at one time in Case I. was so profound that neither current, as above mentioned, would bring about any reaction, and yet we had a good

[1] G. P. Putnam's Sons, New York, 1877, page 25.

recovery. Now, can this be an acute myelitis? While my friend Dr. Seguin is sanguine, to a limited extent, in the acute and subacute anterior myelitis of the adult, he expresses himself, in 1877, in his monograph, to which reference has just been made, on page 117: "I am at present inclined to the opinion that unless cured in two or three months, children with myelitis anterior have very little prospect of perfect recovery," and a few lines further, generally speaking, he says: "In other words, I believe that the prognosis in adults and children depends upon a factor which we can only indirectly determine—I mean the amount of injury done to ganglionic cells of the anterior horns. We have not as yet, and probably a long time will elapse before we shall have, the elements for saying that ganglion cells may be regenerated, or even that they may be purged of accumulations of granular matter." Now, whatever views Dr. Seguin may entertain at present, I must say that my own study of cases, not a few from a clinical stand-point, and from my study of them as to ultimate results under circumstances, often laborious, compels me to say that I am unable to adduce a single case of what I believe to be idiopathic anterior poliomyelitis of childhood in which complete recovery has taken place. I know that Erb speaks lightly of Kennedy's "temporary paralysis," saying that "scarcely any of his cases belong under this general head [poliomyelitis anterior acuta], and those which do belong under it were not 'temporary.'" Speaking of prognosis, he says additionally: "In fact, the best we can do, almost always, is to make a prognosis of *recovery, with greater or lesser remaining defects.*"[1]

I am aware, too, that Frey and some others have reported cases of complete cure, yet I am among those who question their diagnosis or the completeness of their records.

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[1] Ziemssen's Encyclopædia, vol. xiii., pp. 702, 706.

In Erb's article on Intermittent Spinal Paralysis, he objects to Hartwig's views, that the changes which take place are transitory hyperæmia and serous transudations into the substance of the cord, on the ground that the disturbance is always confined to the motor portions of the cord, leaving the sensory portions entirely free. This Erb calls a fact, but I am unwilling to grant that the sensory functions are always entirely free. Those violent pains certainly prevent us from excluding the sensory tracts, except on the hypothesis of a neuritis migrans. For my own part, I do not see why a hyperæmia of the cornua in the level of the sixth, seventh, and eighth dorsal, and of the first, second, and third sacral nerves, when the anterior cornua are so large, may not produce motor disturbances, taking such precedence over the sensory that the latter becomes insignificant.

In pernicious intermittent fever, in which coma and other grave nervous disturbances have existed, very slight changes are found in the cerebro-spinal axis. "In the comatose form," says Hertz, "a brownish or slatish discoloration of the cortical portion of the brain, and sometimes also of the ganglia, has occasionally been discovered, which was due to accumulation of pigment matter, as well as numerous punctiform extravasations, which have been thought to depend on the blocking up of the capillaries by means of pigment, but which Heschl says may exist independent of the formation of pigment matter, and represent capillary aneurisms. Instead of this, however, it is more common to find only more or less hyperæmia and œdema of the brain-substance and its membranes . . . indeed, hyperæmia and œdema of the brain are the principal conditions present after all the disturbances of the central nervous system connected herewith."[1]

I simply am led to the belief that a congestion of the

[1] Ziemssen, vol. ii., 626.

cord, an active hyperæmia followed by a passive hyperæmia, producing *œdema* of the cord, is the pathological condition in the affection which forms the subject of my paper. I have no personal data, so far as the temperature goes, for denying the inflammatory condition of the cornua. In other neuroses, even of a grave form, Hertz observes that he has never found the temperature elevated. "The pulse is normal or a little rapid, or, in many cases, a little below the average frequency."[1]

The spleen is usually enlarged, when it is enlarged, after repeated attacks of intermittent fever or at the close of a remittent fever. It sometimes regains its size when the patient moves to a non-malarial district. May not the spinal cord in like manner remain engorged so long as the patient is in a malarial atmosphere? There are many cases of paralysis depending on lesion in the anterior cornua, I am convinced, that recover completely. I have histories of several such cases with an undoubted malarial history, wherein the connection is close enough to fully warrant the relationship of cause and effect. A little while ago I spoke of intermittent paralysis being symmetrical. The cases I have just referred to are likewise symmetrical, but as the paralysis has occurred only once, I could not introduce them into this paper. Then, again, there are some cases when only a single member is affected, and I cannot better illustrate this than by reporting the following case of *spinal hemiplegia:*

Through the kindness of my friend, Dr. H. P. Geib, of Stamford, Ct., I saw, Nov. 20th, 1881, a child, Rosie C., aged twenty-one months, living within fifty yards of "the mill pond" of Stamford—a pond which has become quite notorious in the sanitary history of that town. During the drought of the past autumn, the doctor informs me, this pond was nearly dry, no water flowing over the dam, and out of forty houses within a radius of one

[1] Ziemssen, vol. ii., p. 622.

hundred yards of the stagnant water in question, thirty-eight contained unmistakable cases of malarial poisoning. In this family are three children, every one of whom, with the mother, suffered during the whole summer with malarial fever. For four years they have lived within this atmosphere, and the mother herself, during her last pregnancy—the one in which our patient took a conspicuous part—was suffering from the tertian variety. The babe suffered during its first year with symptoms always relieved by antiperiodics. In June of present year, it began to have distinct chills with fever following. These continued every second day until July 28th, when the left arm was found to hang limp by the side. The left lower extremity was powerless at the same time, and there was no facial disturbance. The child was not constipated, but, on the contrary, had a diarrhœa. Two days later, the fever assumed a remittent type, and the patient was very ill for two or three weeks, there being no apparent return of power in the superior or inferior extremity. The mother tells me that the child was able to use the fingers feebly, yet was not able to hold anything in the hand. She does not recollect whether there was any power in the toes or not. Dr. Geib saw the child only once, making a diagnosis of malarial paralysis. The case passed into other hands, and hence my history of its progress I obtained from the mother, who reports that during this period the child was excessively cross, but did not make any signs, such as using the other hand to rub the left arm or leg, which gave her the impression that the crying was due to pains in the affected members. About the first week in September, or nearly six weeks from the date when the arm first fell powerless by the side, it raised the arm and stood up, the limb trembling all the while. About this time the right hand was observed to tremble markedly when the baby attempted to use it, for instance, in holding a cup. The febrile symptoms have all abated, and convalescence from the paralysis is taking place slowly. When I examined the case to-day, I found a fairly-nourished child, unable to stand alone, but able to stand with very slight assistance, and able to walk across the floor holding on to the mother's hand, tottering like one drunk; both limbs trembled, yet this sign was more marked in the left, and there was a dragging of this foot. The little patient could execute all the movements of the shoulder quite readily, yet with feeble power, and the hand trembled markedly in attempting to hold a light weight. I could discover very little difference between the two hands, for the right one trembled likewise in the same test. The left inferior extremity

responded to all the voluntary tests of muscular functions. I could find no atrophy and no hyperæsthesia either of the four limbs or the spine. There was no splenic enlargement. I did not have an opportunity of making any electrical examination.

The family history is interesting.

The father has been for years an epileptic, and a victim to alcoholism. The mother is free from neuroses, though her mother was for several years before death hemiplegic. The eldest sister is now under treatment for vertebral caries.

At the meeting of the Neurological Society, December 6th, where I had the privilege of presenting the above cases for discussion, my object was gained, and my only regret was that on account of the lateness of the hour, I had not an opportunity of closing the discussion as is usual. Hence I supplement my paper now with a résumé, bearing in mind the points raised by the speakers on that occasion, and for the remarks then made, I must refer my readers to the *Medical Record* of Dec. 17th, 1881, pp. 694, 695.

For one I am not prepared to admit a poliomyelitis anterior acuta in either of the two cases I have reported, although topographically this seems to have been the lesion. In view of all the evidence which the literature of the disease furnishes to the contrary, it would be an astounding assumption, I think, in the absence of any post-mortem data.

That it was not an hysterical paralysis, as first occurred to my friend, Dr. Putnam-Jacobi, I need only quote Jolly[1] who, writing of this affection, says: "*The behavior of the paralyzed muscles to the electrical current is normal;* the excitability both for the induced and for the constant remains unaltered, even after a persistence of the paralysis for years."

Rheumatic paralysis, or paralysis *a frigore* was suggested by Dr. Putnam-Jacobi, and Dr. Seguin was "inclined to take the same view." The former, however, freely admitted that "the point against such a diagnosis was the elec-

[1] Ziemssen: Encyclopædia, N. Y., vol. xiv., p. 519.

trical reactions, which were not those of a functional paralysis." Niemeyer states that rheumatic palsy "does not present any peculiarity with regard to its extension, and for a differential diagnosis we can only avail ourselves of the fact that it is not apt to assume the form of hemiplegia or paraplegia."[1] While the peripheric nerves are the nerves usually attacked by cold, we do not have any law of symmetry observed. A double facial palsy, for instance, is a very rare occurrence, and the facial nerve is so frequently affected that I know I shall be pardoned for italicizing in the following quotation I make from Erb: "Rheumatic paralysis may arise in all parts of the nerves, and in all nerve regions, but, perhaps, most frequently attacks the peripheric nerves, some of them, indeed, as the *facial nerve*, with a marked preference."[2]

A distinguished medical friend, to whose opinion I always attach much weight, has suggested that my first patient may be one of those peculiarly susceptible to the influence of lead. The facts that he never had any symptoms pointing to lead colic, had no blue line on the gums, and had no arthropathies, furnish strong circumstantial evidence, at least, against such a theory.

Authorities say, Erb[3] and Niemeyer,[4] for instance, that this paralysis may be recognized with the greatest facility by the fact that very definite groups of muscles are successively attacked, the extensor muscles of the forearm, those supplied by the radial nerve, being first attacked. And then, too, sensory disturbances are as a rule entirely absent. Niemeyer[5] says that paralysis of the lower extremities when it does occur, takes place long after the paralysis of the hand and fingers. In my own cases re-

[1] Text-book of Practical Medicine, vol. ii., N. Y., 1876, p. 326.
[2] Ziemssen, vol. xi., p. 398.
[3] Ziemssen, vol. xi., p. 450.
[4] Loc. cit., vol. ii., p. 326.
[5] Ziemssen, vol. xvii., p. 576.

ported in this paper, and in those reported by Macario, Romberg, and Hartwig, the paralysis began first *in the lower extremities.* So that I think we have very little difficulty in excluding lead-paralysis.

I am willing, for the sake of argument, to admit (although such was not the fact) that the paralysis did not come on suddenly, to admit that it lasted for some time after *one or two distinctly tertian types* in the early history of the case, that it (the paralysis) did not terminate in sweating so far as my history goes (by some oversight I did not question the parents on this point), that the attacks were marked by sensory disturbances, inasmuch as sensory disturbances are recognized the world over as being the most common manifestations of malarial poisoning, and that the paralysis was not complete, in the sense of general; I am willing, I say, to admit all these five points made, and yet I am unwilling to admit that these attacks presented a single feature that would exclude them from the category of malarial attacks. Because an attack does not follow any distinct law of periodicity, it does not prove that it is not intermittent. In chronic malarial poisoning, the exacerbations may be such and their force may be so spent upon a special organ as to leave results that may persist for indefinite periods. The spleen may be subject to active hyperæmia so often that passive hyperæmia may be induced, the organ may remain engorged and crippled as to function long after the exacerbations have passed away, and a complete change of residence to a non-malarial locality may be necessary to restore the organ to its original size; and to object to calling an affection malarial because a pathological condition is induced, the nature of which we don't know, on the ground that this unknown condition somehow *produces* the symptoms in question, seems to me to be the limit of pathological refinement. We claim to look for causes of disease, and if a disease

can be proven to be malarial in origin, for instance, what a point, therapeutically, have we gained!

Even in the simplest forms of intermittent fever, the sweating stage is often absent or reduced to a minimum,[1] and in young children Hertz[2] says that this is never so general and profuse as in older children and adults. Masked intermittents prevail about New York; these have very irregular types and are above all others neurotic in their phenomena.

In conclusion, then, let me call attention to the necessity of differentiating between the curable paralyses of children and the incurable paralyses. Let me state, too, on the strength of cases that I have not reported in this paper, because they were not intermittent, or relapsing, if this term be preferable, that there may be spinal paralyses affecting one side or a single member, clearly traceable to malarial poisoning. They are not numerous, however, and the history will generally enable one to exclude a poliomyelitis anterior. If nervous diseases are increasing, as many authorities claim, may we not expect to find the cerebro-spinal axis the more readily and the more frequently influenced by malarial poisoning, just as we find now the nerves so commonly affected?

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[1] Saint-Vel, Gazette hebdom., 1863, No. 13.

[2] Ziemssen, vol. ii., p. 597.

POLIOMYELITIS ANTERIOR, INVOLVING MUSCLES OF THE TRUNK AND THE FOUR EXTREMITIES. REMARKABLE RECOVERY.

BY

L. C. GRAY, M.D.

T. F. C., Irish, 25, drug-clerk. Onset September 3d, 1879. Complete paralysis in five days. Only premonition was a slight feeling of lassitude three days previous. No cause known. Remained completely paralyzed about three months. Eighth day after onset there was marked diminution in reaction of nerve and muscle to faradism. Galvanism not tested. Wasting of paralyzed limbs began during the first month, and was very well marked at the end of the second. Symptoms purely motor, none cerebral or vesical. Improvement slowly began in the fourth month; could sit up in bed, raise leg slightly, lift arms, but not use hands. In fifth month, could raise himself out of bed, stand when supported. In sixth month, could walk when supported, could write by grasping pen in the usual way, but trailing it after the hand; also slight improvement in wasting. In seventh month, walked alone a short distance, and wasting was so much diminished that muscles were nearly as stout as before the disease. In eighth month, could walk about, though awkwardly, as he stretched out his arms to balance himself, and was unable to thoroughly erect his trunk. From this date, the improvement has been progressive until to-day, *December 21st*, 1881, two years and three months after the onset, he walks well, and for long distances, having been employed for the last eight months in a business which keeps him walking about all day. There is a certain lack of muscular steadiness in his movements—a certain muscular precipitancy, as it were, which is quite perceptible, and which causes a slight flop of the foot. He also walks with his legs more apart than would one with sound muscles. He informs me that he can write as well and as long as ever. Indeed, he can stand muscular fatigue as well as ever in every way, except that walking with anything

in his arms soon causes a weary feeling across the loins. He has a slight tremulousness in moments of any excitement, or upon muscular strain. This tremor is very fine, and is also rhythmical. It is only by the extreme fineness of its movement that it differs from the early tremor of disseminated sclerosis and paralysis agitans. The muscles are apparently as full as ever. The faradic reaction is excellent in the upper limbs, but still greatly impaired in the lower ones. As the case was seen in consultation, at a distance, the galvanic battery was not used.

EPILEPTIFORM STATES OF A PECULIAR CHARACTER ASSOCIATED WITH IMPERATIVE CONCEPTIONS.

BY

E. C. SPITZKA, M.D.,

New York.

On the 18th of July of last year, I was consulted by William H——, a tobacconist, aged 39, and a native of Germany, with reference to certain attacks which I do not hesitate to consider an abortive form of epileptic seizures. They began with sharp and almost painful formication in the finger-tips and feet, then followed a sensation of losing consciousness, against which the patient struggled, and which he overcomes, as he avers, by catching on firmly to some fixed object. Should the attack occur while he is eating, his arms, and particularly his hands, contract violently, so that it is impossible to take the knife or fork from him, while he, conscious all the time, experiences inability to loosen this grip. At times, the ordinarily tonic spasm exhibits a clonic character ill-marked. His wife states that, while he says but little during this attack, which is of hardly more than momentary duration, what he says is rational, and connected with his mental processes, as evinced before and after the attack. I had the fortune of seeing him at the inception of an attack at my office, on the *20th of July*. His ordinarily mobile and dilated pupils became more dilated while he described the tingling aura to me. I made him inhale a few drops of nitrite of amyl, to which he reacted readily, and he expressed himself that the fit was broken. With the tingling, he had on this occasion a sort of sensation as if telegraph wires were strung through his body, accompanied by a "drawing" feeling. At other times, an odor was perceived, such as musk, opium, gas, or as of a very cool fresh air. Six weeks ago, the patient arrived here from New Mexico, and during that period has noticed an increased frequency of the attacks, which, in previous years, were few and far between.

As a young man, he experienced a greater number of them, associated with the peculiar mental symptoms to be described, but, under skilled medical treatment, they disappeared, the patient asserting that cannabis indica had been more efficacious than any other drug. A new feature was developed in New Mexico, his attacks beginning with violent cardiac palpitations, and culminating in a feeling of being generally paralyzed.

The patient has been married fourteen years; four years after his marriage, he, as he now terms it, "imagined" that he saw his clerk make a signal to his wife, and based a suspicion of marital infidelity on this fact, which, however, he corrected a few weeks later, becoming convinced that he had been the victim of a delusion. Three months later, he experienced imperative conceptions, in the shape of the idea that, if he turned his head rapidly, he would encounter a sharp piece of broken glass or a knife. Particularly when a horse in the street rears its head, he cannot, struggle as he may, divest himself of the idea that its neck will be severed by a large butcher's knife. These ideas seize on his mind suddenly, startle him by their strangeness, and he reasons vainly against their absurdity; originally they were very painful to him, latterly they have ceased to be as annoying, because he is getting accustomed. He is not certain but that the sight of a slaughter-house in full operation has suggested or determined the idea about the horse's neck.

I placed the patient on ergot and bromide of sodium, and provided him with nitrite of amyl against the return of any prodromata of an attack. For five days he was entirely free from any untoward symptoms, after which time I lost sight of him.

A sister of the patient was epileptic; a very bright daughter was neurotic and timid to a remarkable degree.

I know of but one case in the literature in which imperative conceptions or impulses were associated with epileptic manifestations. It is described by Dr. Russel, in the *British Medical Journal* for 1879.

THE DIAGNOSTIC SIGNIFICANCE OF A DILATED AND MOBILE PUPIL IN EPILEPSY.

BY

LANDON CARTER GRAY.

IN the summer of 1880, I read a paper with the same title that heads this one, before the American Neurological Association.[1] By a dilated and mobile pupil I mean one that is always more or less dilated, even in a bright light, and which undergoes the changes from contraction to dilatation, and reversely, in response to light or accommodative movements, much more quickly than does a normal pupil. Since that time, my experience has so confirmed the facts to which I then invited the attention of the profession, that my belief is stronger than ever in the diagnostic value of a dilated and mobile pupil in epilepsy. I had then examined forty-nine epileptics, and found this kind of pupil in all but four. Three of these four were inmates of the Flatbush Hospital for the Incurables, to the courtesy of whose medical officer, Dr. Guy D. Daly, I was indebted for the opportunity of observing them. One was a decidedly non-typical case, and the other two were sixty-five to seventy years old, and their advanced age probably accounted for the fact that their pupils were only slightly dilated and mobile. The fourth seeming exception was in a dement in the Flatbush Lunatic Asylum, who, however, proved nothing, because he was blind in one eye from advanced and progressive keratitis. But, during the time that has elapsed since the reading of my paper, I

[1] Am. Journ. Med. Sci., Oct., 1880.

have found this pupil in every epileptic whom I have examined for it—in about twenty more cases, therefore.

The time, of course, has gone by when we can consider any one symptom as always indicative of one disease, and never of any other. It would be trite to remind my readers that it is upon the aggregation of symptoms, and not upon any isolated one, that we base our diagnosis in our modern day. But the fact, nevertheless, that of sixty-six cases of epilepsy, constituting all that have been examined for this purpose, every one presented the peculiar pupil which I have described, is a fact of great significance; and, if to it the future can add the further fact that *all* cases of epilepsy are marked in this way, we shall come into possession of still more valuable information. By means of this symptom, I have several times made a diagnosis in obscure cases, in which the subsequent history has borne me out; and I can conceive how it could frequently be of service. Suppose a case of nocturnal epilepsy, brought to one because of vague nervous symptoms, the convulsions having been witnessed by nobody; or, suppose a case in which the diagnosis lies between hysteria and epilepsy, and the history, as often happens, is imperfect; or, suppose that the epileptic convulsions are wilfully concealed, as by a person whose station in life makes this an incentive; or, suppose a criminal in whose defense a plea of epilepsy is set up, and we are unable to obtain with certainty the other and usual evidences of the morbus sacer, in all these instances the advantage is apparent of being acquainted with a phenomenon that is invariably present in epilepsy.

It is stated by Drs. Kiernan, of Chicago, and Kinnicutt, of New York, that a dilated and mobile pupil has been seen by them in several cases of melancholia. I have myself seen it in migraine, and rarely in chorea. But I have not seen it in other diseases, although dilated pupils alone,

without any unusual mobility, are common enough; and, in chorea, it is unusual, whilst in migraine and melancholia its frequency has not been determined. The fact, however, that it may be found in non-epileptic individuals does not destroy the importance of the fact that it is always present in epilepsy, except there be local preventive causes, as a keratitis, myosis of old age, etc.

What is the cause of this symptom? It must be an exalted molecular instability of those nerve-centres whence arise the nerves subserving the mechanism of sight; in other words, an increased reflex of these centres; and the pathological condition inducing this increased reflex is also the cause of the continued dilatation. The nerves which regulate the action of the pupil are: 1, the optic, which is the great receptive nerve for the pupil; 2, the motor oculi communis, through which run certain fibres of the cranial sympathetic to the iris. We may dismiss the trigeminus from our consideration, since its action upon the pupil is an indirect one. Which of those centres is it, then, which is in the abnormal molecular condition appertaining to an increased reflex, the optic or the cranial sympathetic? If it were the optic, the abnormal molecular state would be propagated to the cortex, and become apparent as disturbances of vision, but, as these are infrequent in epilepsy, it must be the sympathetic that is at fault.

By epilepsy, in these cases, I mean the typical form of the disease as exemplified in the ordinary petit mal or grand mal, and I do not include the anomalous forms to which the names of Jacksonian and thalamic epilepsy have been given, or those epileptiform convulsions which result from various other conditions.

ANOMALIES OF THE BRACHIAL PLEXUS.

BY

A. H. P. LEUF, M.D.

A STANDARD is the first thing necessary in making anatomical comparisons. This is especially true of the brachial plexus, on account of its frequent morphological variations. I will first explain what I consider to be a typical plexus, and then describe the atypical

There seem to be essentially but two views as to what is a typical brachial plexus. The one, as held by Quain, is that the fifth and sixth cervical nerves join to form an *upper trunk;* that the eighth cervical and first dorsal make up a *lower trunk;* and that the seventh cervical continues onward, between the two, as the *middle trunk*, subsequently dividing into two branches communicating with the upper and lower trunks. The other view, as diagrammatically shown in Gray's anatomy, differs from the former in describing the origin of the plexus by two trunks, due to a junction of the seventh nerve (middle trunk) with the fifth and sixth nerves (upper trunk). Henle, in the main, holds the first view, as do also a number of English anatomists. The prevailing opinion in this country, however, appears to agree with that of Gray. An observation of my own, extending over several years in the dissecting room of the Long Island College Hospital, has served to add more evidence to the latter view. Fully one-half of the plexuses there observed corresponded with Gray's diagram. This, then, I consider as the typical and most frequent formation of the brachial plexus.

The anomaly that I have represented in the diagram accompanying this note occurred on the left side of a white adult male. Its opposite fellow was typical. The main peculiarity of this plexus is the shortness of its cords and their direct origin from the spinal nerves. The upper and lower trunks are absent. The outer cord is very short, and the inner one is also short, dividing into two, subsequently reunited. There was no lesser internal cutaneous branch. The posterior cord receives no fibres from the first dorsal, nor, of course, do any of its branches. The supra-scapular, instead of coming from the outer cord, *i. e.*, being composed of fibres from the fourth, fifth, sixth, and seventh nerves, arises from the fifth nerve after it is joined by a branch from the fourth. The other branches not appearing on the diagram were normal, and were omitted for the sake of simplicity. These nerves were not artificially "split up," although they could not safely be separated any further. Of all the plexuses I ever examined, I was careful to separate the cords and trunks as much as practicable and as could be properly done.

Thinking that an enumeration of similar registered anomalies would lend additional interest to this note, I have appended some instances reported by others.

Quain[1] says that in a great number of instances only two primary trunks are found instead of three, due to the union of the middle with the upper trunk. But this Gray considers as the most frequent mode, and my observations, thus far, corroborate his view. The roots of the posterior cord may also arise above or below the origin of the other cords. Gray calls it normal when they arise below, while Quain considers it normal when above. The latter also states that the fifth and sixth, or the fifth alone, not infre-

[1] Quain's Anatomy. He refers to Turner, Nat. Hist. Rev., 1864, and Jour. of Anat., 1872; Henle, Systematic Anat., vol. iii.; Lucas, Guy's Hosp. Reports, 1875, etc.

quently pierce the scalenus anticus, and that the fifth has even been found to pass altogether in front of it.

Henle contents himself with a general description of the brachial plexus, because its variations are too numerous to permit of any single detailed description of one.[1] He says that in one of Kaufmann's[2] specimens the posterior of the two cords, formed by the junction of the fifth and sixth cervical nerves, was joined by the median branches of the seventh and eight cervical and first dorsal nerves, to take the place of the posterior and inner cords and their branches. In another preparation, all of the seventh cervical enters into the formation of the posterior cord which, in this instance, also receives the intercostal branch of the second dorsal, and then divides into two branches that unite with others from the fifth and sixth cervical. There arises from this posterior cord, in addition to the circumflex, radial, and internal cutanei, a large strand to join the cord, giving off the external cutaneous, median, and ulnar. In one arm the median formed a loop around the profunda brachii instead of the axillary. Henle also mentions that the first root, or any of those following, may pass in front of the scalenus anticus. He credits Demarquay[3] and Hellema[4] with the originality of this observation. Quain mentions this anomaly, and refers to Henle. Others generally do likewise, or at least disclaim ever having seen it themselves. It seems, then, that the observations of Demarquay and Hellema are generally referred to, either directly or indirectly, whenever this anomaly is mentioned.

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[1] "Ich begnüge mich mit dieser allgemeinen Beschreibung der Nervenverbindungen im Plexus brachialis, da die Mannichfaltigkeit derselben zu gros ist, um die Aufstellung einer mehr in's Einzelne gehende Norm zu gestatten." Henle, Systematische Anatomie, 3ter Band, S. 475.

[2] Die Varietäten des Plexus brachialis. Giesen, 1864.

[3] Bulletin de la Soc. Anat., 1844, p. 78.

[4] Geneeskundig Tijdschr. voor de Zemagt, 1867, 1 Afl.

Holden[1] writes: "A deviation, one which I observed once only in three hundred arms, may occur, in which all the nerves are situated above the artery, and on its acromial side, the vessel being entirely free in the whole of its course."

Prof. Turner,[2] in one of his contributions to anomalous anatomy, says: "More than once I have seen the plexus to possess three, and not two cords, in its original construction: an anterior formed by the junction of subdivisions of the fifth, sixth, and seventh cervical nerves; a posterior by the junction of a subdivision of the eighth cervical with the first dorsal. In another case, the anterior cord was formed by the junction of subdivisions of sixth and seventh; the posterior by junction of subdivisions of seventh and eighth; the inner by a subdivision of the eighth cervical joining the first dorsal. The outer cord gave origin to the musculo-cutaneous and outer head of median nerves; the posterior to subscapular and musculo-spiral; the inner to ulnar and inner head of median. The nerve of Wrisberg, the internal cutaneous, and the anterior thoracic, arose directly from the first dorsal; the supra-scapular from the fifth cervical, and the circumflex was formed by a junction of the almost equally-sized branches of the fifth and sixth cervical nerves. In another case, the brachial plexus had only two cords in the axilla: a posterior which gave origin to its usual branches; an external from which arose all the branches which usually spring from the outer and inner cords. The branches for the inner side of the limb passed superficial to the arterial trunk. In another subject, the seventh cervical nerve did not join the upper cord of the plexus, but divided into three branches, one passed to the inner, another to the posterior cord, and the third entered directly into the

[1] Manual of Anatomy, 1868, p. 209.

[2] Journal of Anatomy and Physiology, 1872, pp. 102–3.

formation of the median nerve. In another subject, the outer cord of the plexus gave origin to both anterior thoracic nerves, to the outer head of the median, the musculo-cutaneous, and to a long slender branch which crossed obliquely in front of the axillary artery to join the ulnar. In another, the anterior thoracic nerve, which supplied the pectoralis minor, arose by two roots, one from the inner, the other from the outer cord of the plexus. In another, the left ulnar nerve had two roots, one from the inner, and an accessory fasciculus from the outer cord, which was traced upwards to the seventh cervical nerve: it crossed in front of the axillary artery and joined the ulnar opposite the lower edge of the tendon of the subscapularis."

In closing, I would point out that much space and time could be saved in the publication and perusal of anomalous anatomy by proper diagrammatic representations.[1] A clearer understanding of their character and much readier comparisons would thus be obtained with less chance for confusion.

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[1] Owing to the late transmission of the article of Dr Leuf, the diagram accompanying his manuscript could not be utilized for this issue.—EDITORS.

TWO CASES WITH ANOMALOUS EPILEPTOID SYMPTOMS.

BY

LANDON CARTER GRAY.

I.—Male, aged twenty-one, unmarried, American.

Patient is subject at times to attacks of this kind: A feeling of heat arises with great suddenness from the epigastric region, and he becomes dizzy. The face is convulsed and turgid, the lips drawn up so as to show the gums, and the patient begins to move in a large circle, making a blowing noise as he does so. In this condition it is said that he remains for a few seconds, and then is himself again. He believes that these movements and this noise are voluntary, and asserts that he makes them because they give him relief. There is no loss of consciousness. Pupils dilated, and react to light and accommodation with great readiness. Is sluggish in his mental action, but presents no symptom of insanity. About a year ago, is said to have had a "fit," in which his face and limbs were convulsed, and he foamed at the mouth. No tongue-biting. There is reason to suspect some nocturnal disturbance, as patient wakes in the night with a tired and confused feeling, and on awaking in the morning he has occasionally had the same feelings, to such an extent, that he has been obliged to sleep during the day. Has been a masturbator, and the trouble began soon after the cessation of this habit, patient believing that there is a connection between the two events. Heredity good, except that his mother and a sister were deaf, although the cause cannot be ascertained. Marked improvement followed the use of the bromides, but he has been so irregular in attendance and the use of medicine that no adequate trial of therapeutics has been made.

II.—Male, aged nineteen, Canadian, unmarried.

Some six years ago, patient's right arm began to fall powerless; this at long intervals. The powerlessness would last, it is said, a few seconds; no loss of consciousness. About one and a half

years after, the right leg began also to fall powerless, and the attacks increased in frequency. Next, the right extremities would at times become extended, the arm more often than the leg; at the same time they would tremble, and, after a considerable length of time had elapsed, the tremor would extend throughout the body. Consciousness was lost occasionally, seldom in the day-time, and immediately after it was recovered, patient passed into a deep sleep for an hour or so. In the night-time, after recovering consciousness, patient would often cry for hours, knowing perfectly well that he was doing so, but being unable to control himself; at other times in the night, after one of these attacks, he would walk about his room in an unconscious condition. The attacks now consist of extension of different limbs, generally those on the right. Almost always tremor. Occasionally loses consciousness. Has variable number of fits in a day, sometimes as many as twenty-nine. Occasionally will be without any for days or weeks. Intelligence moderate, of childish order. Pupils contracted; fairly mobile.

When about four years old, fell a distance of twenty feet, landing on his feet; and then, it is positively stated, falling into a sitting posture, not striking the head; about the same time was run over by a wagon which passed over his foot; at another time had a second fall out of a window about a distance of three feet, landing on his head; still no ill symptoms were noticed to have resulted from these accidents; irreproachable heredity, except that boy's father died of Bright's disease, it is said.

A month before the first attacks, the boy's sister died, and he mourned greatly over her loss.

The bromides make this patient much worse, at times almost maniacal, after prostrating him physically to an alarming extent; but after they have been stopped, he is always free from any of his nervous symptoms for a period varying from one to two months and a half. Belladonna is the only drug which will give him relief, and that only to a limited extent. Zinc sulphate, woorara, quinine, hyoscyamine—all only served to aggravate his condition.

By many, these cases would be called by the name of "Jacksonian epilepsy," simply because they deviate from the type. But I am not at one with those who thus misinterpret the philosophical writings of Dr. Hughlings-Jackson. All that this gentleman has undertaken to do

has been to offer an explanation of the molecular process common to all forms of nervous disease which are evidenced by sudden nervous actions. He is the philosopher, not the clinician. Thus, when he says, "Epilepsy is the name for occasional, sudden, excessive, rapid, and local discharges of gray matter,"[1] he is stating a general proposition, not describing a special form of disease. I should prefer, therefore, to regard my cases simply as anomalous in the localization and order of the symptoms, and in the reaction manifested by one of them to drugs.

[1] West-Riding Lunatic Asylum Rep., vol. iii., 1873, p. 331.

EDITORIAL NOTES AND COMMENTS.

We are in receipt of a copy of the new edition of the Constitution, By-laws, and List of Members of the New York Neurological Society. According to this edition, the Society has sixty-two active and thirty-one honorary members. Of the active members, four reside in Brooklyn, two in Poughkeepsie, two in other cities, and fifty-four in New York. The National Neurological Association has thirty-five active members; of these, twenty are members since its foundation, in 1875. On comparing the lists of these kindred bodies, thirteen physicians are found to be members of both. By an oversight, the name of Isaac Ray is given as that of a still living honorary member of the local society, which mourns his loss as the sixth bereavement on its honorary list; the other five deceased members being E. R. Hun, E. H. Clarke, G. B. Duchenne, Thomas Laycock, and F. E. Anstie.

A recent investigation of the State Asylum for Insane Emigrants on Ward's Island, which is one of the institutions under the supervision of the State Commissioner in Lunacy, revealed a very anomalous condition of affairs. It seems that the investigation was the result of an intestine disturbance, the matron intriguing against the asylum physician, who had reprimanded some of her favorites for neglect of duty. In this instance, fortunately, the dictates of humanity and common sense triumphed over the political influences which have so often defeated the true pur-

poses of similar investigations; the physician was sustained, and the matron dismissed. The worst feature exposed was the fact that a relative of one of the officials had had the key of the female wards, paid frequent nightly visits, and that this privilege culminated in the adoption of the "increase and multiply" principle on the part of several of the irresponsible patients.

According to an old report of the Prussian statistical office, there were in the year 1878 twenty female and one hundred and six male paretics in private asylums, while four hundred and fifty-four female and eight hundred and twenty-six male paretics inhabited the public institutions in France. The proportion of females to males in the latter asylums was as fifty-four to one hundred, in the former, only eighteen to the hundred, showing that females of the poorer classes are more liable to paralytic dementia than those in affluent circumstances.

The October number of the *Journal of Mental Science* contains a eulogy of the late Dr. Edouard Seguin.

The same journal opens with a full report of the excellent Presidential Address, delivered before the British Medico-Psychological Association, by Dr. D. Hack Tuke. The President-elect did not confine himself to merely chronicling the great progress made in the strictly scientific fields of medical psychology, but also touched on the sociological and humanitarian aspects of psychiatry. Regarding the subject of mechanical restraint, and the discussion of this subject in Germany and France, he says: "I wish here only to chronicle the fact, and would urge the necessity of not confounding honest differences of opinion with differences of humane feeling. The non-

restrainer is within his right when he practises the system carried to its extremest lengths. He is within his right when he preaches its advantages to others. But he is not within his right if he denounces those physicians, equally humane as himself, who differ from him in opinion and practice. I, therefore, unite with the observation of Dr. Ray, by whom the non-restraint system as a doctrine was not accepted, and the same may be said of the majority of his fellow-psychologists when he wrote thus in 1855: Here, as everywhere else, the privilege of free and independent inquiry cannot be invaded without ultimate injury to the cause."

Those who have, from various motives, joined the growing camp of "asylum reformers," in this country, would find it advantageous to ponder these words well. It seems that from protests originally directed only against the unquestionably existing abuse of restraint, which has been at least temporarily modified since the agitation—those most recently active in the matter have loudly advocated the necessity of its total abolition. The promulgation of this extreme view has had no good results. It has alienated many sympathizers with the movement of asylum reform from active participation, it has forged weapons for its adversaries, and has arrested the progress of a reform which originally, at least, was agitated from the purest motives, and had rather scientific than humanitarian objects in view.

A German alienist, speaking of the new therapeutical departure, or rather fashion, with reference to the employment of hyoscyamia, expresses his surprise at the enormous doses recommended by certain English writers. His surprise would, no doubt, be augmented if he were familiar with the fact that still larger doses are recommended by several of our colleagues on this side of the

Atlantic, to fulfil the most opposite indications, such as the suppression of melancholic as well as paretic hallucinations, *raptus melancholicus*, and maniacal explosions, while others employ it indifferently in the treatment of epileptic stupor and mania. We can, from our experience, only indorse the warning statement that hyoscyamia is an exceedingly dangerous drug, that its great danger lies in the sudden development of depressive effects, and that, on the whole, its influence on the nerve-centres is not of a kind desirable in the treatment of most mental diseases. Even the administration of moderate doses is occasionally followed by such pronounced symptoms as aphonia and acute ataxia, according to the writer referred to, Dr. Schule.

Dr. Marion Sims, in some comments on a paper published in the New York *Medical Gazette* of October 22d, refers to the fact that as early as 1847 Dr. W. O. Baldwin, of Montgomery, Alabama, had detailed several cases in which severe symptoms followed the administration of quinine. One of particular interest is that of a lady who received eighty grains in a few hours for an attack of pernicious intermittent fever; of this she was relieved, but the next day was blind, and has remained so to the present moment, a period of thirty-five years. In the accompanying article of Dr. Baldwin, several cases of death attributed by him to the use of large doses of the drug are related, and experiments on dogs illustrating its toxic properties cited. Dr. Baldwin found, chiefly, a remarkable increase in frequency of the pulse, dyspnœa, maximal pupillary dilatation, convulsions, and, in one case, furious delirium, the dog biting and barking at everything about him. His observation that the effect of quinine is proportionately far greater on puppies than on grown dogs, is in

harmony with the known fact that relatively small doses may prove fatal to children.

The statistics furnished by Dr. Lewis D. Mason, of the Inebriates' Home at Fort Hamilton, N. Y., in admirable contrast with the average literary productions emanating from the American Association for the Cure of Inebriates, are exceedingly suggestive in more than one way. His cases were two hundred and fifty-two in number; of these, about one-fifth were females, not quite one-fourth belonged to the better educated classes; among females, inebriety was more common with spinsters than with married women. While insanity in the parents was a predisposing cause in many cases, inebriety in the parents was a more fruitful source. Of one hundred and sixteen cases, whose families exhibited this condition, ninety-two had inebriate fathers, only two inebriate mothers. Dr. Mason does not believe treatment possible outside of an institution; we have contrary, perhaps exceptional evidence. It would be of interest to have learned what proportion of his cases were true dipsomaniacs, ordinary cases of chronic alcoholism, or of polydipsia. The great importance of head injuries, as a cause of inebriety, is demonstrated by his figures, one-seventh of his cases being caused by such.

In a vivacious and somewhat gossipy reminiscence of his career as an alienist, Dr. C. M. Brosius, of the private asylum near Coblentz, speaking of the insanity of married women, mentions the existence of a group of cases, marked by exacerbations of great bitterness of feeling directed against the husband, demonstrable delusions being absent. Such women are often prominent subjects of scandal, they become spies on their husband's actions, open their letters, bribe servants, and induce children to watch them. In

company, they openly declaim against their "tyrants," announce their intention of suing for a divorce, and violently denounce their alleged rivals, the suspected paramours of their husbands. It is evident from some of the histories related by Dr. Brosius that he has thrown together the earlier stages of a number of different psychoses. Few alienists will agree with him that the absence of sexual gratification is a frequent cause of such troubles; this pessimistic view of the female sex is a common one; but he who cares to investigate the question on the basis of facts, and not the assertions of libertines, too often accepted as evidence, will arrive at very different conclusions.

Dr. Kane, in a communication to the *Medical Record*, recommends the inhalation of opium smoke as a therapeutical agent in irritative bronchial affections. After trying the opium cigarettes of Reginald Thompson, and failing to obtain very positive evidence of a good effect, he employed the Chinese opium pipe, and got very gratifying results. In one case of "malarial neurosis of the heart," it was the only appliance that had a beneficial effect.

Dr. Whitmer, of the Government Insane Asylum at Washington, was the guest of the British Medico-Psychological Association, at the thirty-sixth annual meeting of that body, held August 2d, 1881.

It is stated that Sergeant Mason, who attempted to shoot Guiteau in jail, will plead mental derangement, resulting from an overdose of quinine, as an excuse for his attempted crime. The most frail and ridiculous plea made in favor of this man would probably find instant favor with a certain class of the public, while the clear and

consistent record of Guiteau's hereditary history, his insane actions, documents, and manner may go for naught with the same people.

At the meeting of the Section on Mental Diseases, Dr. Ferrier, in discussing Dr. Tamburini's paper on hallucinations, "hedged" considerably on the question of his now demolished visual centre, and announced that the time was not far distant when localization might be the practical basis of insanity. It is quite safe to say that that time is at an infinite distance, in short will never come.

At the same meeting, Dr. Fletcher Beach mentioned having had the brain of an idiot in whom the internal perpendicular fissure was not joined to the calcarine fissure, Dr. Parker, of Philadelphia, it may be recollected, found the same condition in negroes.

Speaking of the last International Medical Congress, the Journal of Mental Science has the following: "Most to be regretted of all was the circumstance that the communication from Dr. Ashe on General Paralysis, the discussion of which was looked forward to with special interest, and on which Irish psychologists came prepared to give valuable information on the seeming immunity of their countrymen from this disease, was passed over. We cannot be surprised that this untoward circumstance caused much and general dissatisfaction. The collapse of Dr. Beard's demonstration was, under the circumstances, inevitable, but when Professor Preyer had given up his return to Germany at great inconvenience, in order to attend it, and discuss the question, and when he, Dr. Braid, and many others assembled at the appointed place, it is greatly to be regretted that no responsible person

was present to ask the Professor to speak himself, and give the results of his latest researches in hypnotism."

M. Leven, of Paris, claims the occurrence of apoplectiform and congestive attacks from dyspepsia—a fact familiar to physicians; he also predicates as characteristics of the mental condition of dyspeptics, that there never is an actual disturbance, but rather an anenergy of the mental powers. Their depressed condition differs from hysterical melancholia, in the fact that cutaneous hyperæsthesia is a common feature with it, according to the same author.

The *Medical Record* states that, in connection with the recent electrical exposition at Paris, a number of instruments used in medicine and surgery were exhibited. Among these were new galvanic batteries invented by Onimus, the "polyscope" of Trouvé, and cardiaphones, sphygmophones, and myophones shown by Boudet. The latter also exhibited an electrical diapason for the treatment of pain by mechanical vibrations. That a prominent characteristic of the medical part of the exhibition was the number and variety of static machines may be taken rather as the outcome of a desire on the part of the exhibitors to give a flavor of variety to the exhibition, than as an indorsement of a superfluous addition to our electrical armamentarium.

Sir John Lubbock has recently made an interesting discovery, which is destined to modify our views of visual perception as fundamentally as Landois' researches have modified our theory of sound perception. It may be recollected that Landois, in studying the stridulating apparatus of various species of insects, found that many species reported as "silent" by naturalists were provided with a

perfect stridulating apparatus, and that certain individuals could distinguish the sound they produced as one of an extremely high pitch, while many persons heard no sound at all. On the other hand, he found that many insectean sounds of high pitch which are ordinarily appreciated by the human ear, were a complete blank to some persons. Further researches convinced him that whole realms of sound exist in nature unknown to the human ear.

Lubbock, starting with the well-known fact that ants hide their *larvæ* in a dark place when disturbed, experimented as follows: He covered their nests with glass plates of the chief colors of the spectrum, and found that they preferred to remain under the red light, while under the violet they showed signs of discomfort, and fled rapidly. From this he inferred that red light simulated darkness to the ant's perceptions, and violet, daylight—a state of affairs exactly the reverse of human subjective experience. This led him to believe that the ant's spectrum is more extensive than our own in the ultra-violet direction, so that red light is darkness, yellow and green are perceived as light impressions, increasing with blue and violet, and extending beyond the violet end of our spectrum. This view was confirmed by his interposing menisci of fluids which, like sulphate of quinine and sulphide of carbon solutions, intercept the ultra-violet rays, and he found that the ants felt perfectly at home under full daylight transmitted through such solutions.

There are hence not only sounds unheard by the human ear, but also colors unseen by the human eye, and it requires no argument to show that what is white light to us must be a different colored light to some insects.

In a critical digest of the latest publication of Betz on the cortical structure, Bevan Lewis points out in how

many respects Betz was really anticipated by Meynert. In stating that "prior to the appearance of this memoir of Betz, these great cells (the giant pyramids) had been noted by several observers, and had been regarded as as 'hypertrophied brain-cells,'" he fails to refer to the authority who first asserted their identity. This was done in a review of the Transactions of the International Medical Congress, published in the January, 1878, number of the *Journal of Nervous and Mental Diseases.* It is also remarkable that the English observer seems to be altogether unconscious of the existence of a paper by Graeme Hammond, establishing the existence of giant cell-nests in other parts of the brain than those to which Betz limited them. Bevan Lewis insists that the general cortical type is six-layered and not five-layered. He divides the fourth layer of Meynert into a granule layer and a ganglionic layer. This division we cannot but consider unfortunate, as the largest pyramids are found right among the granular *columnæ*, and we feel convinced that a study of the transition of the frontal into the eight-layered type will convince the investigator that the large pyramids are confined in their distribution to the granular stratum or its homologues. If it is correct that the granular layer represents the sensory recipient field of the cortex, the location in that layer of the gigantic motor cells is in anatomico-physiological harmony with the observations of Munk and Exner, that the "tactile areas" of the cortex seem to be topographically identical with the "motor centres" of the corresponding periphery.

An anatomical writer, in referring to the interesting topographical relations of the decussations in the isthmus, makes the following summary, which seems to simplify their relations. Taking the altitude of the great tracts as presented in the transverse section, the area of the trapezium being found most dorsad, the stratum intermedium

lies just ventrad of this, but sinks below the level of the fibres of the inter-olivary decussation, and most ventrad of all, the pyramidal tract is situated. The decussations of these tracts follow this law, that the most ventral tract decussates most caudad, the most dorsal tract, most cephalad. Passing caudo-cephalad we have, first, decussation of the pyramids; second, of the stratum intermedium (Olivenzwischenschicht, Flechsig); third, of the olivary fibres; fourth, of the trapezium. With this, it is observed that the angle at which the fibres decussate becomes more reduced as we go cephalad.

A remarkable confirmation of the view that the pyramidal tract innervates either exclusively or mainly the extremities, rather than the trunk, is furnished by the fact that in the aquatic mammalia, in whom the extremities are reduced, the pyramidal tract is not demonstrable, notwithstanding the great preponderance of the cerebral hemispheres in these animals. The diagram in Huguenin representing a basilar view of the porpoise's isthmus is erroneously marked; what is designated the pyramid, is in reality the "olivary" elevation, and a sort of lateral tract covering and continuous with the latter.

Dr. Kiernan writes that, on a recent visit to Bloomingdale Asylum, Dr. Hallock, the second assistant physician of that institution, showed him several cases of *hæmatoma auris* which had been treated by blisters, produced behind the ears, with the view of avoiding deformity. The results were very satisfactory. The applications were made during the first twenty-four hours.

In a paper read by Dr. Moeli before the "Berliner Gesellschaft für Psychiatrie und Nervenkrankheiten,"

reference was made to the frequency with which mental disturbances complicate the motor and sensory disturbances following railway injuries. Usually these mental manifestations consist in depression, a lachrymose disposition with irascibility, insomnia, and attacks of fright, associated with vivid reminiscences of the accident. Simulation was carefully excluded. Recovery occurred in two recently-observed cases. In the discussion, attention was called to the possible occurrence of paralytic dementia of a slow type, as a result of railway injuries.

Dr. Isaac Ott, of Easton, Pennsylvania, has adopted the very commendable plan of having bound together his numerous communications to the different American medical periodicals, thus putting them in more convenient compass for neurological readers. Part III. has appeared already, and Part IV. is promised for 1882.

At the State Asylum for the Insane, Kalamazoo, Mich., one of the assistant physicians, Dr. E. A. Adams, was stabbed with a pen-knife by a patient. The attack occurred on the sixth of January, and the victim died the following morning. In the struggle with the lunatic who perpetrated the deed, an attendant was also stabbed severely, but it is believed not dangerously.

REVIEW DEPARTMENT.

1. UNTERSUCHUNGEN UEBER DIE LOCALISATION DER FUNCTIONEN IN DER GROSSHIRNRINDE DES MENSCHEN, von PROF. SIGMUND EXNER. Wien, 1881. Braumuller.

This monograph constitutes an important *etappe* in our progress to a definite and reliable localizataion of the functions mediated through the cerebral cortex. Its author, believing that the time has come for collating the numerous registered cases of circumscribed cortical lesions, has, in place of performing new experiments in this well-trodden field, contented himself with endeavoring to harmonize the oftentimes conflicting obsertions of others, and at the same time sifted the wheat from the chaff. Over a thousand cases were collected by him, and of these one hundred and sixty-nine positive observations were found to comply with all the demands which a critical investigator would be required to make.

Professor Exner has approached the difficult subject of which his work treats by three different lines of research. The first follows the "method of negative cases;" the second, "the method of percentage calculation," and the third, "the method by positive cases." The latter method he considers the least reliable. The first method consists in marking on a diagram of a hemisphere all those cases in which a cortical lesion occurred without producing a given disturbance, and inferring from this the presumable area within which the undisturbed function resides. With the second method, the area of a brain cast is subdivided by arbitrary lines into a number of squares. Of these the author made three hundred and sixty-seven, the smallest and most numerous being at the more important regions, such as the neighborhood of the Rolandic and occipito-parietal sulci. He then constructed tables, in which each of the arbitrary fields occupied a place, designated by its numeral; while in one column, the side of the hemisphere, in another the number of cases in which the field was involved, and in others the percentage of these cases, in

which a given disturbance occurred, are registered. For example, the record of "field 53," which is at the junction of the upper and middle thirds of the precentral gyrus and bordering the central fissure, reads as follows :

C.	No. of Cases.	Facial Muscles.	Upper Extremity.	Lower Extremity.	Speech.	Muscles of Neck.	Muscles of Tongue.	Muscles of Eyeball.	Tactile Disturbance.	Visual Disturbance.	No Disturbance.
On right side.....	8	.88	.100	.63	..	.13	.13	.13	.13	.13	.00
On left side.....	22	.76	.100	.73	.14	.09	.14	.09	.09	.00	.00

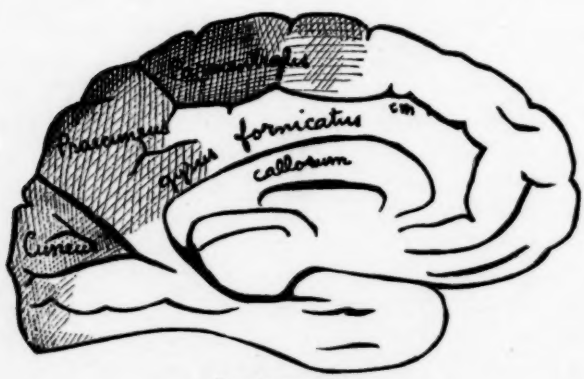
Based on these tables, Exner painted the squares on different casts or diagrams, with a dark color, whose intensity decreased with the lesser constancy of the symptoms referable to that field. Thus, on a given diagram, a pitch-black color would designate the field with which paralysis of the arm was a constant symptom, less darker shades in which it occurred in eighty, sixty, and forty per cent of the cases recorded, and very light shades for those with whose lesions paralysis occurred in a still smaller percentage. This method proved of great value, inasmuch as it enabled the investigator to discriminate between what he happily terms the *absolute* and the *relative* cortical fields, the former being those whose lesions invariably produce a given phenomenon, the latter those whose lesions frequently, but not as constantly, produce the same result.

An idea of the extent of the fields of different intensity may be formed from the subjoined diagrams, drawn after Exner's plates:

The third method is considered admissible only on the condition that not only a given prominent disturbance be marked down to a special field with whose lesion it occurs, but that also all accompanying anomalies be registered with it. The site of a given centre can then be inferred from the greatest accumulation of special foci. The reason why Exner considers this method as the most uncertain he illustrates by the following supposititious case: "Let us take for granted that the part of the *gyrus fornicatus* adjoining the paracentral lobule is the cortical field for the lower extremity. The part mentioned is but extremely rarely the seat of disease (there is but one case in my series in which it was

affected); the latter occurrence, on the other hand, is very frequent. Now, disease of the paracental lobule will, as can be inferred from other cases, also exert a disturbing influence on the neighboring gyrus. We will then register several, perhaps even many cases, in which injuries of the paracentral lobule are accompanied by disturbances of motility of the lower extremity, and from this conclude that the cortical field for the latter is in that

Field of the upper extremity on convexity of left hemisphere.



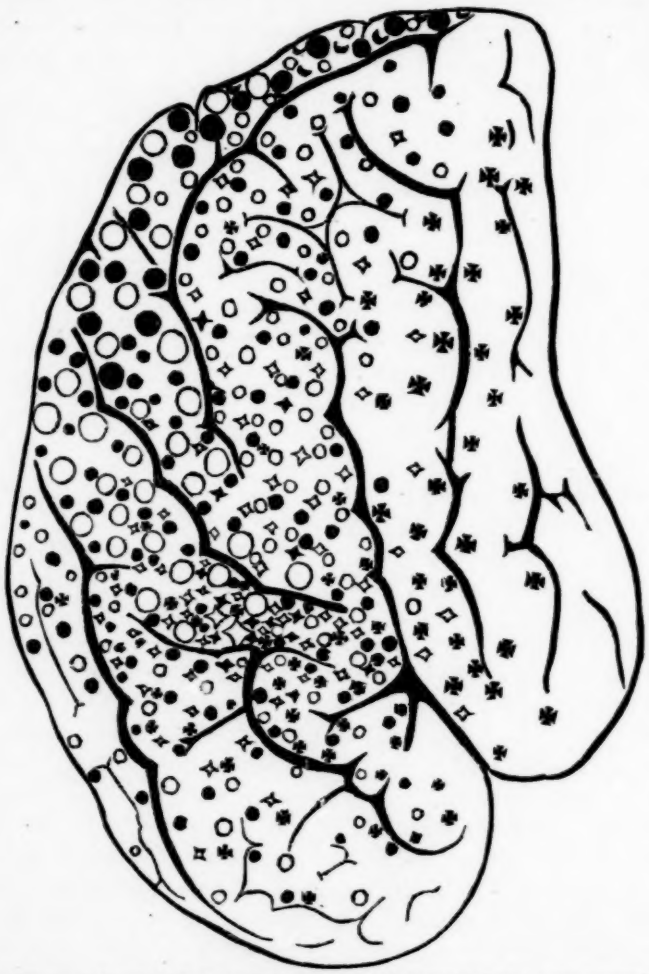
Same on mesal face.

lobule." He strongly protests against the unjustifiable assumption of narrow cortical centres on the basis of one or two isolated lesions, while ignoring the other symptoms co-existent with the one which is referred to that centre. An example of such an assumption is that by Landouzy, who claimed on the basis of some admittedly striking cases that the cortical field of the levator palpebræ was in the posterior part of the inferior parietal lobule. He indorses the criticisms of Nothnagel, but does not go to the

extent of claiming, as the latter does, that in order to justify the localization of a centre, the symptoms referred to it in a given case should be of chronic stability. He maintains that they may be evanescent, on the basis of the evanescent nature of the symptoms produced by cortical excision in dogs, and notably on the strength of the celebrated case, recorded by Hitzig, of a dog in whom the removal of a cortical field which just previously had been determined by electrization to innervate the anterior extremity, failed to produce paralysis; then showed paralysis on an additional incision at the operated region being made, from which he recovered after some weeks.

The author, after these provisional remarks and a more detailed statement of his manner of marking the lesions than could be properly recapitulated within the limits of this review, proceeds to describe what he terms the "cortical area of latent lesions;" that is, the large area which *may* be the seat of a lesion without the occurrence of any motor or sensory disturbance. Remarkably enough, this area is larger on the right hemisphere than on the left—a fact attributed by Exner to the greater extent of the motor fields on the left side. Aside from this, the respective areas are, as might be anticipated, symmetrical. In the area of "latent lesions" there are degrees of latency, just as there are "absolute" and "relative" fields in the active fields; and while Exner includes all areas in which motor and sensory disturbances are not *necessary* results of lesions, under the designation latent, he does not intend to convey the impression that such symptoms may not be produced there. In this limited sense the entire right hemisphere is latent, with the exception of the precentral and post-central gyri, the para-central lobule, and a strip of the convex surface, as well as the ventral surface of the occipital lobe. Probably the latent area of the right frontal lobe would have turned out to be more limited, had Exner not included the case of an imbecile in whom a lesion of the posterior ends of the three frontal gyri of the right side failed to produce any paralysis or disturbances of sensation, "in the ordinary sense of the term." On the left hemisphere, the latent fields occupy the cortical surface, with the additional exception of the entire parietal and a greater portion of the occipital lobe. This encroachment on the latent field is due to the great development of the visual field and the greater posterior extension of the motor fields. The position of the gyrus fornicatus is in part very doubtful on account of the rarity of lesions of this locality. The cortical field for the right upper extremity consists of the paracentral

lobule, the precentral gyrus, with the exception of its lowermost portions and the upper half of the post-central gyrus. It is an open question whether the anterior part of the lobulus quadratus and a part of the gyrus fornicatus may not have the same relation. The region indicated is an "absolute" cortical field; that is, it



f. Diagram showing all the ascertained special functional fields on the convexity of the left hemisphere. The large-sized symbols indicate the "absolute" fields, the smaller ones the "relative" fields.

Upper Extremity, represented by light circles.
Lower " " dark circles.
Vision " crescents.
Speech represented by crosses.
Tongue muscles represented by dark rhombs.
Facial " " light rhombs.

has thus far never been found the seat of a lesion when paralysis of the left arm was absent. Surrounding this area, there is a considerable "relative" field, which extends over nearly the entire hemisphere. The absolute cortical field for the right upper extremity, that is, the one of the left cerebral hemisphere, is larger; it includes the greater part of the upper parietal lobule, the upper two-thirds of each of the central gyri, the para-central lobule, and very likely a part of the inner face of the occipital lobe. The relative field of "great intensity" occupies the posterior half of the upper frontal, nearly the whole of the middle and inferior frontals on the convexity, the upper half of the occipital lobe, and the lobulus quadratus, with possibly part of the cuneus. On comparing the area just mentioned with the other cortical fields derived from his studies, Exner comes to the conclusion that the field of the right arm is the largest of all the cortical areas. The absolute field of the posterior extremity on the right hemisphere consists of the paracentral lobule, the upper third of the precentral, a lesser portion of the adjoining part of the post-central gyrus, and a few spots behind and below the lobulus quadratus. On the left hemisphere, it is very similar in extent, but includes in addition the greater part of the upper parietal lobule. Instead of occupying an insignificant portion of the post-central gyrus, it encroaches on its whole upper half, and is less marked on the precentral. In fact, there is a general tendency of the left hemisphere field of the extremities to extend backwards, as contrasted with the corresponding right field. Exner adds that if his tables could have been so compiled as to show at a glance the extent of each of the lesions producing paralysis of the extremities, the greater "sensitiveness" of the field for the upper extremity as contrasted with that of the lower would have become evident. In other words, lesions of slight extent, involving those areas common to both extremities, will frequently produce paralysis of the arm alone, while the leg is unaffected. The cortical field of the facial muscles is an absolute one only on the left hemisphere; it is merely relative on the right side, where it attains the greatest intensity, about eighty-one-hundredths, in the lower third of the post-central and the lower half of the precentral gyrus, shading off to the posterior part of the middle and lower frontals and the anterior part of the supramarginal gyrus. The left absolute field is a narrow streak belonging to the anterior part of the precentral gyrus, opposite the end of the middle frontal; the relative field is symmetrical with that of the right side, the same tendency to a more posterior

encroachment noticed in the case of the extremity fields, characterizes the left facial field. In the facial field, Exner found it impossible to differentiate the different muscular groups beyond the confirmation of the old observation that the palpebral orbicularis is only exceptionally disturbed by any cortical lesion.

The hypoglossal field is very difficult to establish; it appears to be relative on both hemispheres, nowhere exceeding $\frac{63}{100}$; it is remarkable that this field is less intense on the left hemisphere than on the right. This fact, Exner endeavors, in our opinion very plausibly, to explain on the basis of Stricker's metaphor. Stricker compared the muscles of articulation to a well-trained pair of carriage horses, driven with double reins, by two drivers (the cortical centres of each side), in such a way that while both drivers or the right one alone directed them in their ordinary gait, the left one alone was capable of directing their finer evolutions. If we bear in mind that, as far as the coarser movements are concerned, each driver chiefly watches the opposite horse, but the left one, on the whole, pays least attention to these very movements, the lesser intensity of a field devoted to the finer co-ordinations becomes less contradictory with our theoretical conceptions.

Exner encountered some difficulty in discriminating between the areas responsible for different forms of speech disturbance, owing to the imperfect descriptions of many of the cases registered. In general, it seems that the nearer a lesion of the symbolic field approaches the absolute centre for the arm, the more likely is agraphia to occur; the more the middle temporal is involved, the more likely is word deafness. Amnesic aphasia appears to be more dependent on generalized lesion, and the probability of pure ataxic aphasia increases with the approach of the lesion to the posterior end (pars opercularis) of the lower frontal gyrus, and the limitation of the destructive lesion.

As regards the visual field, Exner's tables confirm Muhr, and constitute a crushing *dementi* for Ferrier. Truly the whirligig of time has brought about its revenges in this instance. The only comment Ferrier had to make about the philosophical and painstaking researches of Muhr, consisted in a sneer at their unreliability. Now Muhr's observations have stood the test of clinical experience, as well as of anatomical research, and Ferrier's alleged results are relegated to the domain of the fanciful and "not proven."

The following diagrams exhibit the extent of the visual field as determined by the "method of positive cases."

The field of the tactile sensations is much more intense on the right than on the left hemisphere, and there appears to exist a sort of complementary relation between the two hemispheres, the left preponderating over the right as regards motility, the right over the left as regards sensation. As it is highly probable that the visceral innervations follow the visceral sensations, and these, general sensations in the cortical fieldings, this discovery of

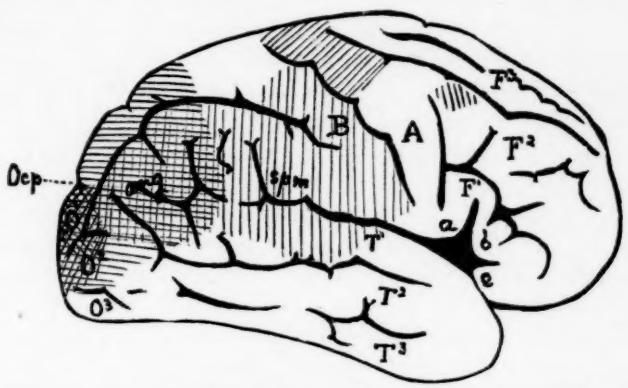
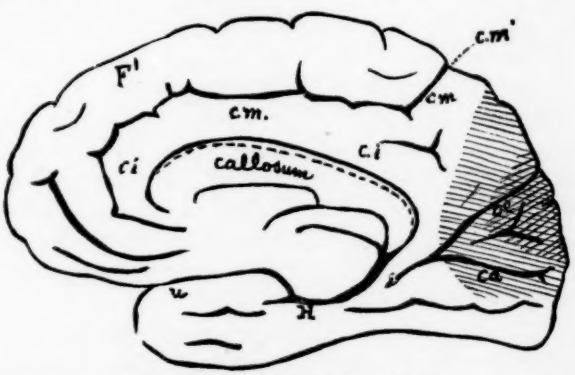


Diagram of cases producing visual disturbance, convexity of right hemisphere.



Same on mesal face of right hemisphere.

Exner's may open the door to a confirmation of the view advanced by Brown-Séquard and others, that right-sided lesions are more apt to involve the organic functions, and are hence of greater fatality than those of the left side.

As a rule, the sensory fields are nearly identical with the motor fields for the same periphery, and the author cites as a remarkable corroboration the experimental results of Munk, who found his

tactile areas in the dog's brain to almost correspond with the motor areas discovered by Hitzig.

As the most important result following from Exner's work, we must point to the beautiful explanation it furnishes of the why and wherefore of the so-called vicariating areas of the cortex, and the satisfactory manner in which it disposes of the objections of Goltz and Brown-Séquard. If we fully imbibe the doctrine that the cortical areas are not sharply demarcated circles, like those drawn on Ferrier's diagram, or on the older phrenological charts, but diffuse areas and rather districts of functional concentration, and that they overlap each other, we can understand why even a considerable lesion may fail to destroy a given function perma-

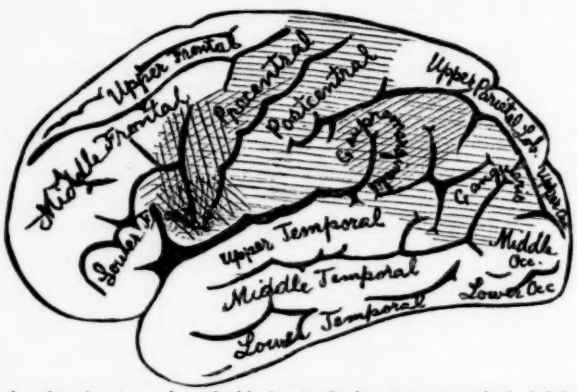


Diagram showing the cases of cortical lesion producing tongue paralysis, left hemisphere.

nently. It remains, however, a fact, that considerable lesions in the areas of greatest functional intensity are never followed by complete recovery. From this point of view the various hypotheses of Hughlings Jackson and others, however ingenious they may be as theories, fall to the ground and become, to say the very least, superfluous.

Not only do the tactile fields correspond very closely to the motor fields of the same body regions, thus sustaining the shrewd guess of Meynert that the rôle of the cortex is not so much the liberation of motive force, as the mediation of sensations of innervation (Innervationsgefühle), but all determinable function areas, which, on physiological grounds, must be considered to require a bond of association, are found to present regional points of contact. Thus the symbolic field (field for written and spoken symbols) approaches the fields of the upper extremity, of the tongue and of hearing.

After the announcement of these conclusions, the abstracts of

one hundred and sixty-seven cases are given. Among those from whom these cases are cited, Bramwell, Charcot-Pitres, Fürstner, Petrina, Nothnagel, Boyer, and Bourneville are notable for the large number of cases contributed by them to this list. A full and comprehensive literature of the whole subject concludes the volume, which is rendered one of the most attractive contributions to our modern physiological literature, by the addition of twenty-five excellent plates, many of which are colored, while others contain photographs.

There is but a single point which the author seems to us to have laid insufficient stress on, and which yet might have furnished many interesting suggestions in support of the kind of localization which he appears to us to have established. We refer to the wonderful correspondence between his areas and the areas of particular types of cortical structure. Thus the visual area corresponds in its distribution to the area in which Meynert describes his eight-layered cortical type to occur in the greatest purity. The diffusion of the motor centres appears to harmonize with the discovery of cortical nests of large pyramids outside of the area where Betz first located them. The identity in locality of tactile with motor areas harmonizes with the notorious coincidence of a granular cortical layer, suspected to be sensory by Meynert, with the largest presumably motor pyramids in the fourth layer of the five-layered cortical type. There are other views of Meynert which acquire a strong support from Exner's researches; aside from the confirmation of Meynert's visual area, the latter's "speech field" is not only re-established, but extended by the cautious compiler and critic, whose valuable monograph we regret not having the space to present to our readers in a fuller abstract.

2. Die Manie. Eine Monographie von Dr. E. Mendel. Docent an der Universität Berlin. Wien und Leipzig: Urban und Schwarzenberg. 1881.

In view of the great confusion existing, with reference to the conception of "Mania," the author before us, already favorably known through his excellent monograph on Progressive Paralysis of the Insane, has undertaken to compare the different definitions that have been assigned to this term, and by selecting the best one and establishing a clearer demarcation than we hitherto possessed, to evolve order out of the prevailing chaos. He properly claims, while admitting the modern tendency of the Germans to subdivide insanity into minor clinical groups, to be a

praiseworthy one, that before the erection of such groups can be properly attempted, the great fundamental forms, such as mania, should be duly defined and limited as a preliminary.

The work opens with an etymological consideration of the term on the book-title and a historical survey of the various definitions that have been attached to it. The author pronounces in favor of the view of Curtius, who derives the secondary forms *μαίνομαι* and *μανία* from the root *μεν, μαν*, which has the multiple significations of active thought, excitement, and enthusiasm.

The various definitions quoted are so contradictory that Mendel comes to the conclusion that authors have not clearly separated "typical" mania from other forms which show some clinical relationship to mania. According to him, typical mania begins with an initial stage of depression (somatic and psychical) followed by a stage of exaltation, then of furor, and finally by retrogression of these symptomatic states. In his experience, the stage of depression never reaches, in intensity, the grade of stupor; where stupor is followed by maniacal explosions, we have not a true mania but a *raptus melancholicus*—a fact which, Mendel fails to inform his readers, has been already maintained by other alienists, notably by v. Krafft and Meynert. He might, also, have here differentiated the mania-like stages of katatonia, occasionally following cataleptic stupor in that psychosis from the true maniacal explosions.

We believe the statement that the initial depressive stage is in many cases of recurrent and periodical mania either absent or ill marked, and which alienists will generally indorse, to have been for the first time distinctly advanced by the writer before us.

In only one case did Mendel find the initial stage of depression to have a true melancholic character; and, he adds, that where the transition from the depressive to the exalted stage takes place suddenly, cyclothymia is to be suspected, since, with typical mania, the transition is ordinarily gradual. In his description of the maniacal and furibund explosions, he does not differ from the classical writers. The histories of five characteristic cases are given to illustrate the course of the typical affection. The perusal of these histories is calculated to give a far clearer idea of what true mania is than any mere description in the abstract, and the plan first adopted for didactic psychiatric purposes by Krafft-Ebing, and followed by the present author, of illustrating the individual variations occurring in a given form of disease, by selecting a few characteristic cases and briefly giving their his-

tories, is deserving of imitation. Naturally, we are far from indorsing the extreme to which this plan may be carried, of expanding the histories of cases, and contracting the text proper, to the extent which has been attained in some recent pamphlets on alleged general paralysis of the insane, where the so-called monograph is little better than a compilation from the case records and cash-book of the author.

The description of typical mania is followed by a consideration of the aberrant forms. Deviations from the standard may be merely such with regard to intensity. Cases occur in which the disease does not reach the ordinary explosion, and remains at the level of a mere exaltation; these Mendel ranges under the head of "Hypomania," a term derived from Hippocrates, whose conception was, however, wider than that which Mendel assigns to it, and included what Pinel designated as "mania sine delirio" (*folie raisonante*) as well. The light form of true acute mania and these constitutional affective insanities should be kept strictly apart. Four histories are given to illustrate "hypomania," but, in his remarks as to the differential diagnosis, Mendel neglects to point out how apt a physician might be to confound hypomania with a certain phase of progressive paralysis of the insane. When it is borne in mind that, in hypomania, there is great self-exaltation, that thefts and forgeries of a kind occasionally occurring in cases of paresis are not rare, that the patients are impatient of contradiction, and very prodigal in the expenditure of money, the importance of calling attention to the differential signs must appear evident.

A second variety is designated as hallucinatory mania. This form is so named because hallucinations, ordinarily a rare symptom, are here common and characteristic. It must have been this form, as Mendel critically remarks, which Meynert studied when he derived the maniacal symptoms from a preceding hallucinatory stage. Most cases of mania from acute diseases and the puerperal state, exhibit this phase of the disease, which, aside from the early prominence of hallucinations, does not differ from the ordinary clinical picture of mania.

The third variety comprises that malignant affection to which the name of *manie grave* has been given by the French, *delirium acutum* by the Germans, and, we believe, which Bell intended to describe when he named a form of violent mania passing into a muttering delirium: typhomania. Two cases are related to illustrate this sufficiently well-known affection, but the author fails to be as explicit as he should have been with regard to the termina-

tion of mania gravis, and seems to have overlooked the important observations of Jehn. This observer (Ueber die klinische Aeusserung der Reactionszustände acuter Delirien) described a profound state of apathy and mutism which occurs as a sort of reaction from the explosion of mania gravis. This state had not been previously described except by Jensen; it is generally of ominous import, and this finds its expression in the grave somatic results—the hair falls out, the skin desquamates, the nails show peculiar marks, due to an atrophic zone, corresponding to the acme of the condition, and for weeks the patients lie in a state of collapse and abulia, and, if they improve at all, have to relearn the art of walking. This picture, in many details, is similar to the convalescence from a severe typhus, but recovery after all does not occur; there is irregular heart-action, the spleen is sometimes found enlarged, and occasionally a perfect cataleptic condition ensues. The anæsthesia is so extreme that, in one instance, a patient gnawed off his entire ungual phalanx of one finger. Generally the termination of this condition is a sort of terminal dementia, but its close resemblance to the maniacal explosion of a paretic is heightened by the circumstance that paralytic dementia is an occasional sequel, and that the trophic disturbances simulate those of the latter affection.

Still other varieties of mania are then enumerated by Mendel the next group comprising forms which are aberrant as to their duration. After criticising the cases of psychical epileptic equivalents, acute intoxications and febrile deliria, which have been designated as transitory mania, Mendel comes to the conclusion that there is no true transitory mania, and indorses Schwartzer's statement to the same effect; he is, however, unable to agree with Schwartzer in the latter's claim, that there is such a thing as "transitory raving" with a definite etiology, pathogenesis, and a characteristic course. To the English reader, Schwartzer's discrimination, that there is no "transitorische Manie," but that there is a "transitorische Tobsucht," may appear like a hair-splitting procedure, inasmuch as "Tobsucht" is translated by "raving mania." But to those who appreciate the distinctness of mania, properly speaking, from the furious and raving states, which may, but need not, complicate the former condition, the distinction appears a just and advantageous one. From this point of view, we must indorse Schwartzer's statement that there is an acute stormy psychosis, meriting the designation of transitory furor, and which is independent of epilepsy, hysteria, febrile and toxic states (Die transitorische Tobsucht, Wien, 1880). An

important confirmation of Schwartzer's position has been furnished by Kiernan (Contributions to Psychiatry), whose two related cases are pure cases of "transitory raving," although their relator describes them under the current English term, and in his conclusions fails to exclude the alcoholic states as impure instances. Mendel appears to have observed a genuine case of "transitory raving," and without any strong grounds asserts it to have been probably epileptic. This case, like those of Kiernan and Schwartzer, shows that the "transitory raving" has more the character of a melancholic *raptus* than of a true mania.

With reference to periodical mania, Mendel admits the impossibility of always distinguishing between it and recurrent mania; the former may in its individual exacerbations ape typical mania, or the hallucinatory form, as well as the one described as hypomania. The older the disease the less likely is there to be a preceding depressive stage; in some cases, tropho-neuroses are noticed to accompany or to replace the attack. While it is true of a number of cases that the attacks of the individual patients are almost photographic reproductions of each other, the same delusions, yes the same hallucinations recurring with wonderful regularity, Mendel urges that this is not a strict rule, but that, on the contrary, in given cases the attacks may differ, not alone in intensity, but also as to their clinical manifestations. He confirms Schuele's statement that one fundamental difference between the periodical and the recurrent maniac is that the former is never altogether normal in the lucid or pseudo-lucid intervals. He does not, however, indorse that author in his claim that periodical mania belongs to the degenerative series, inasmuch as no hereditary taint was discoverable in a number of his cases. Undoubtedly both Schuele and Krafft-Ebing carried their principles of classification to an extreme, and the basis on which the former writer asserts the presence of an organic disturbance of brain development as the foundation of periodic mania, is almost puerile, but we cannot find anything in Mendel's objections that would materially invalidate the classification adopted by Krafft-Ebing in this regard at least, that periodical mania belongs to the constitutional vesanias.

Under the heading of "chronic mania," he remarks that such a form is found enumerated in most statistical tables of British and French Asylums, but that on closer examination it will be discovered to be in reality a terminal or secondary phase, and undeserving of the designation "mania;" he fails to mention that the first one to call attention to the impropriety of the classification

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involving the use of that term was an American author (*Race and Insanity, Journal of Nervous and Mental Diseases*, October, 1879). In condemning the use of the terms erotomania, nymphomania, hysteromania, amenomania, *et cetera*, the author is not explicit enough and too sweeping; he might, for example, have stated that while some of these terms were improper, because designating variable symptoms of mania, others had been employed (such as erotomania) to demarcate states that have no relation to mania whatever.

The third chapter is devoted to a consideration of the special symptomatology of mania. Mendel here partly confirms Meynert to the extent, at least, of admitting hallucinations to be more common in mania than is generally supposed to be the case. The hallucinations and other sensorial disturbances in mania are characterized by their mobility as contrasted with those of partial insanity and melancholia. In our opinion, the hallucinations of mania are closely allied to the illusion, and rather belong to Wundt's class of illusional hallucinations than to the hallucinations strictly so-called.

A very revolutionary statement is the one on page 112, that there is no such thing as a "dipsomania." Mendel claims that the cases so-called are either periodical vesanias, accompanied by a desire for alcoholic beverages, or exacerbating cases of moral insanity, or of exacerbating neuroses, or, finally, simply instances of polydipsia. We can assure the author of the unquestionable existence of cases, few however they may be, where without any exciting cause, in hereditarily predisposed subjects, periodical cravings for alcohol, or opium, or some other toxic agent, were the only marked evidences of mental disorder. It is true that, like other evidences of an abnormal mental organization, it rarely exists alone, but it is not the less a genuine symptom for that reason. If alcoholic beverages and narcotics were unknown to the human race, the perverse tendencies of those whom to-day we call dipsomaniacs would manifest themselves in some other way; but that is no more an argument against the propriety of the term than would be the claim that the term "religious form of 'Verrücktheit'" was inadmissible, because that form could not exist if the world were and had always been agnostic on religion.

With reference to the medico-legal bearings of the subject, the author, without here furnishing a guide to his readers, says that the most important question is the discrimination between recurrent and periodical mania, as the civil capacity of the patients in the former state may be intact in the interval, while it is always to be called into question in the latter state.

The prognosis, with most authors, he regards as exceedingly favorable. He claims that eighty per cent and over recover entirely, and that in the majority of cases there is no relapse. From his computation, as he might have done with regard to any consideration in this volume, he excludes periodical mania; the prognosis here is absolutely bad. His computation of fatal cases of mania generally yielded the surprisingly large figure of five per cent, twice as great as that of Esquirol, who obtained two and and a half per cent as the proportion of deaths in twelve hundred maniacs. Our author, who is noted as one of the most cautious and accurate pathological investigators of the insane brain, finds himself unable to establish an anatomical basis for the disease—a position in which we find ourselves, excepting with regard to a single case of mania gravis.

Aggregating his clinical observations, those made on the autopsy-table, and the views of authors, Mendel defines mania to be "a functional cerebral disease, characterized by a morbid acceleration of the conceptions, and a morbidly exalted irritability of the cerebral motor centres."

The volume concludes with a very practical chapter on diagnosis, chiefly relating to the differential signs which distinguish mania from the maniacal phases of paresis, ordinary deliria, *raptus melancholicus*, episodial deliria of monomaniacs, and certain varieties of moral insanity. He here makes up for a shortcoming of a previous chapter by endeavoring to indicate the diagnostic difference between recurrent and periodical mania. The latter has generally a shorter initial period, more rapid changes of mood, and runs a shorter course in its exacerbations; less perfect lucid intervals also serve to characterize it.

On the whole, this monograph is an important contribution to psychiatric literature, and except where, it seems to us from an undue desire to say novel things, he has laid himself open to what little criticism we have had occasion to make, its author is very objective in tone and judicious in his conclusions.

3. Ueber Gehirndruck von Naunyn und J. Schreiber in Königsberg in Preussen; mit 7 Curventafeln. Leipzig: F. C. W. Vogel, 1881.

The authors of this somewhat bulky monograph have made an important contribution to our knowledge of the various factors determined by variations in the intracranial pressure. After the preliminary statements that there are no grounds for assuming the existence of a fluid in the subdural space, and that it is de-

sirable to extend the experiments performed by Pagenstecher, Leyden, and Duret on the subdural space to the proper field for variations in pressure under normal circumstances, namely the subarachnoid space, they proceed to detail the methods employed by them. Dogs, especially young animals, were found to be very convenient subjects, inasmuch as the subarachnoid space in these animals extends some distance caudad of the conus terminalis, as a distinct cavity. The posterior lumbar vertebral arches being removed, the dura is found sufficiently transparent to permit the recognition, through it, of the conus terminalis, and immediately behind this point a canula is inserted, with a ligature catching a fold of the dura around it. The first fact, one readily determined, was, that a change in pressure of the spinal subarachnoid fluid is instantaneously transmitted to the cerebral spaces. Salathé, in the course of some experiments undertaken in Marey's laboratory five years ago, demonstrated a similar fact; but, like Pagenstecher and others, he did not test the subarachnoid, but the subdural pressure. Our investigators found, on exposing the roof of the fourth ventricle in one of the operated animals, that as slight a rise of pressure as six to eight millimetres of mercury led to a visible and tangible bulging of the tegmen ventriculi, while on the other hand a slight pressure with the handle of a scalpel on the latter, was instantly registered by a rise of the column in a manometer connected with the spinal subarachnoid canula.

While the transmission of pressure either from the spinal cavity to the fourth ventricle or *vice versa* was thus shown to be practically instantaneous, it was found that some seconds elapsed before pressure in the subarachnoid space of the cerebral convexity was registered in the manometer attached to the canula in the spinal region, and in some instances a full minute passed before the column stood as high in the lower manometer as in one inserted through an opening in the parietal region. With this they found that while pressure was transmitted without loss from the cerebral to the spinal manometer, though with some delay, pressure in the opposite direction, that is from the spinal cord to the brain, was delayed a much longer period, and was also materially diminished, slight rises at the spinal end often failing to register at the cerebral end altogether, or if for example the spinal manometer registered a pressure of eighty to one hundred and twenty millimetres, that at the cerebral opening slowly rose in from two to five minutes to thirty to forty millimetres. The greatest pressure they produced at the spinal end registered one hundred and thirty-six millimetres there, and one hundred millimetres at the cerebral point. It

would be, however, hasty, the authors claim, to infer from this that the pressure was not transmitted or imperfectly so, in the caudo-cephalic direction, for the brain being driven against the mouth of the canula by a pressure acting cephalad, would interfere with the correct registration of that pressure. While on the whole a rise of pressure is transmitted quite rapidly and within the limits mentioned, in either direction, a lowering of pressure is transmitted very slowly. Thus if the pressure, being raised to one hundred millimetres at the cranial opening, had immediately risen to one hundred millimetres at the spinal manometer, and was then suddenly lowered to zero at the former point, it would at the latter sink to about thirty in half a minute, and require five minutes more to reach zero. These results demonstrated the admissibility of testing pressure taken directly from the dura, as they corresponded to those obtained by the German and French investigators named, who had contented themselves with the latter procedure. It was found in either case that the oscillations dependent on the cardiac and respiratory movements did not occur unless the manometer registered sixty millimetres or over. The respiratory oscillations are generally slight, and become considerable only when the animals yelp or howl, the pulsation rise in some cases reaches the high figure of twenty millimetres or more. The first phenomenon observed on raising the cerebro-spinal pressure is an intense pain, a pain which is manifested even with moderate artificial anæsthesia, and which is produced indifferently whether the pressure is suddenly or gradually raised. From the fact that a sudden increase in the pain is manifested just prior to the production of severer symptoms, the authors infer that it cannot be exclusively attributed to tension of the dura, but that the pressure transmitted to the sensory nerve-roots is a probable factor.

Unconsciousness is found to be a constant accompaniment of high cerebral pressure, its full development is in dogs best recognized by the slowing and lesser excursion of the respiratory movements. It is not produced in all animals at the same pressure level and is found to depend on the co-existing state of the blood pressure. Convulsions, on the other hand, seemed to occur independently of the blood pressure, about the time when the pressure reaches one hundred millimetres. The convulsions continue as long as the pressure rises, as soon as the pressure remains stationary they cease, to recommence if a further increase takes place; in some cases, however, they continue throughout the experiment until the pressure is altogether removed. Where the

compression is very high (one hundred and twenty to two hundred millimetres) the convulsions are sometimes followed by a death-like relaxation of all the muscles; in this case, further rises of pressure fail to call forth spasms. It is noteworthy that a sudden decrease of pressure (from + eighty to naught) also produces convulsions, the latter are at first clonic tremors, then tonic spasms of short duration follow; they are not properly speaking epileptiform, real epileptic spasms being rare in these experiments, as Leyden already observed, and then occur secondarily and not in immediate connection with the pressure. The ordinary spasms are attributed by the authors to cerebral anæmia, and as confirming this view they cite experiments, where, low degrees of cerebral compression being resorted to and no convulsions occurring, the latter made their appearance on closing the carotids, disappearing when the pressure was slowly removed. Others of the spasms, especially the partial ones involving the posterior extremities, are probably reflex, occurring as they do synchronously with the intense pain. The authors may not be sustained by some in their view, that the spasms produced by sudden sinking of the pressure are due to the sudden afflux of arterial blood acting as an irritant. If accepted this would certainly serve as a strong support of the Nothnagel-Meynert theory of the epileptic fit or rather of some of its phenomena, which are by Meynert attributed to *relative* hyperæmias of a *generally* anæmic brain.

A special chapter is devoted to a comparison of the experimental results observed in the dog, and the clinical observations made with cerebral pressure and compression in man. One important difference is the absence of vomiting in the dog; but this does not appear remarkable when it is borne in mind that vomiting is a common phenomenon with cerebral anæmia in man-while it is not found with this condition in the dog. Important points were established with regard to the pulse, which has the greatest similarity to the pulse of acute hydrocephalus, being slow, varying greatly in frequency from time to time, the trace remaining normal. The respiration becomes moderately slower and slighter; sometimes, and with great slowing of the pulse, both in the dog and in man, the high steep trace of the "cerebral" pulse is obtained.

Chemosis, first ranked by Leyden as a symptom of meningitis, was also produced in the dogs of Naunyn and Schreiber, and may be more properly considered a symptom of brain pressure. In all their experiments, they noticed that there seemed to be some mechanism at work, which by absorption tended to neutralize

the artificial pressure produced, and which had to be kept up, therefore, by repeated elevation of the pressure-reservoir.

The very important and practical conclusion is drawn from the main result of their experiments, namely, that the symptoms of compression are all referable to cerebral anæmia, and are more readily produced when the blood-pressure is low than when it is high; that in cases of compression or cerebral pressure from any source in the human being, depleting measures, as tending to lower the blood-pressure, are to be positively forbidden. On the contrary, everything should be done to raise the blood-pressure, as the latter is, in a measure, antagonistic to the cerebral pressure, that is, the pressure transmitted through the cerebro-spinal fluids. They assert the claim of Bergmann, who recommends depletion, because between high cerebral and high vascular pressure the capillary system suffers, and, essentially, cerebral anæmia ensues, to be erroneous, and dismiss it without further discussion. Certainly the practical experience of Traube, cited by the authors, speaks in favor of their view.

The volume concludes with a large number of tabulated statements relating to the individual experiments. The diction of the work, in agreeable contrast with many of the recent contributions to experimental physiology, made both in England and Germany, is lucid and laconic. And it is one of a minority of essays which do not contain a dry list of experiments alone, but utilize the results of these in the interest of clinical medicine. If we had more such work, the clinician would not find himself so hopelessly befogged, as he generally does when endeavoring to explain bed-side phenomena with the aid of physiological data. The single and trifling criticism we are compelled to make refers to the nomenclature: the authors consistently term the pressure of the dura "extra-pial" that of the arachnoid "intra-pial;" this is certainly inaccurate; it should be "intra" and "extra-arachnoid."

4. A MANUAL OF HISTOLOGY. Edited and prepared by THOMAS E. SATTERTHWAITE, M.D., of New York, in association with DRS. THOMAS DWIGHT, J. COLLINS WARREN, WILLIAM F. WHITNEY, CLARENCE J. BLAKE, and C. H. WILLIAMS, of Boston; DR. J. HENRY C. SIMES, of Philadelphia; DR. BENJAMIN F. WESTBROOK, of Brooklyn, and DRS. EDMUND C. WENDT, ABRAHAM MEYER, R. W. AMIDON, A. R. ROBINSON, W. R. BIRDSALL, D. BRYSON DELAVAN, C. L. DANA, and W. H.

PORTER, of New York City. With one hundred and ninety-eight illustrations. New York: Wm. Wood & Co., 1881.

The name of the chief editor of this work is alone a sufficient guarantee of its generally excellent character; and the fact that Dr. Satterthwaite has exclusively prepared many of its special chapters, and has been assisted in the preparation of others by some of our most industrious and able histological students, cannot fail to enhance its value greatly. We regret to say that the only chapter whose subject falls within the scope of review in a neurological journal, that on the nervous system, should, in every respect, be so far behind the rest of the work. For example, the *filum terminale* is stated to be like a peripheral nerve, and to heighten the unfortunate impression this statement is certain to make on the student seeking for information in this work, a reference to Fig. 127 reads, "Its (the filum's) transformation into the coccygeal nerve." If the author of this chapter had been aware of the fact that, instead of a single coccygeal nerve in the middle line, there were two such nerves running off laterally, and constituting one of the recognized pairs, he ought to have given some indications of a possession of such knowledge.

The careful investigations of Rauber on the coccygeal nerves seem to have escaped the scrutiny of the writer before us, Rauber discriminating between an intra-arachnoidal and an outer portion of the filum, and, after excluding the coccygeal nerves, traditionally so-called, which arise much higher up, describes a rudimentary pair of nerves, running with the remnants of the spinal blood-vessels in the outer part of the filum, and an evident relic of our caudate ancestry. It would be just as proper to speak of a transition here, as in the case of any other spinal nerve, or to call this pair a single nerve, as any other pair. It is also erroneous that, as stated by Dr. Amidon, the central canal of the cord opens on the surface. Recent researches prove that it remains a closed canal and ends blindly.

The corresponding chapter in Stricker's work, the best in that volume, has evidently formed the basis of the description here attempted of the anatomy of the oblongata and pons; but this aid has not been of as much service to the author as one might wish it to have been in the interest of the student. The figures accompanying this part of the work show many of them the influence of Huguenin, while others show an entire misapprehension of topographical and systemic relations on the part of the delineator. Nuclei are described in regions where there are none; cells belonging to one nucleus are attributed to another, as on page 310,

where " a small group of *larger* nerve-cells " is attributed to the sensory origin of the fifth nerve, in the lower half of the oblongata, and on page 312, where the lateral nucleus of the mixed system is confounded with the lower facial nucleus. Figure 144 does not, as claimed, show the origins of the third and fourth nerves together, but only of the third pair, and topographically considered, it is inadmissible to attempt their presentation in one transverse plane. A parolivary nucleus is spoken of, but no mention is made of the existence of an external and an internal one; in other words, of two parolivary nuclei, one on each side of the dentated main nucleus.

In describing the origin of the fifth pair, Dr. Amidon, who follows the commendable plan adopted in previous continental publications, of exhibiting successive sections running from the cord cephalad, opens that subject with this statement: "Sections of the pons above this point soon begin to show traces of the fifth nerve." That he should forget his previous statements relating to nearly every other level below this one illustrates the compilatory and undigested character of the chapter. That he should further neglect to mention that the ascending trigeminal root, originating as low down as the cervical portion of the spinal cord, is the chief contributor to the sensory root, serves to demonstrate his unfamiliarity with the most recent writings on the subject of isthmus anatomy.

Where the author has attempted to simplify matters, he has frequently achieved the opposite result. Thus, he substantially reproduces a paper published in the *Archives of Medicine*, describing a new method by which to determine which is the upper and which the lower face of a spinal cord section. The method is an excellent one, but it suffers from the single and grievous imperfection of being based upon an erroneous assumption, which a glance at a human spinal cord or at any reliable atlas would have enabled the author to correct. It is to be doubted whether he has followed his own advice, given in a note on page 307, of making "a longitudinal section" through the upper dorsal and the cervical region of the cord, when he would evidently have found that the lower radicles of the upper nerve-pairs ascend or are horizontal instead of descending. A fine point is a good thing when it has something else beyond its mere delicacy to redeem it.

What idea will the student imbibe on reading the following on page 293? "A less complete septum on either side (meaning the collateral sulcus) dividing the posterior column into two—the

larger, *anterior*, or column of Burdach, and the smaller, *posterior*, or column of Goll." (Italics ours.)

The appended list of literary references is imperfect, and in many respects irrelevant. What relation Ferrier's work on Localization, Seguin's adaptation of the latter, and Broca's study of the same subject have to cerebral histology it is difficult to see. If it was considered necessary to refer to the fibre-systems in the spinal cord, why were these not properly credited to Flechsig, whose name does not appear anywhere; while a diagram representing these systems, and which is modified to the extent of being turned upside down, is credited to Seguin? The erroneous impression thus conveyed that the latter is the discoverer of these tracts is calculated to lead to unpleasant surmises, and places Dr. Seguin, who, in his own works and papers, has always been particularly careful to acknowledge the facts and figures borrowed from others to their proper source, in an unmeritedly false position.

The illustrations of this chapter are mediocre, and many of them incorrect. Figure 131 is purely imaginary; Figure 135 exhibits a huge nuclear mass in the posterior field of the oblongata, whereas there should be two masses well demarcated—the *nucleus cuneatus* and *nucleus gracilis;* Figure 143 shows a trigeminal root of huge proportions, running in a situation that has no parallel in nature, and the entire tegmental field appears to be devoted to that nerve in this diagram; Figure 144 is grossly incorrect in outline and in other respects adverted to; Figure 145 might satisfy a class as a black-board diagram illustrating the coarse relations of lesions, but the editor of the volume should have hesitated before admitting a cut whose presentation of the ventricular outlines is a caricature to such an extent that a *single* cerebral ventricle underlying the corpus callosum appears as if separated from the third ventricle by the middle commissure, and whose caudex of the nucleus caudatus lies an inch from the gyrus fornicatus.

References to the best American laborers on the anatomy of the nervous system are omitted, and in at least one instance quite demonstratively so, which is calculated to lead to very strange reflections.

5. Die Porencephalie, eine Anatomische Studie von Dr. Hanns Kundrat. Graz, 1882. Leuschner and Lubensky. (With nine lithographic plates.)

Porencephaly is a name given by the distinguished Vienna

pathologist, Heschl, to a peculiar defect in the contour of the cerebral hemispheres, simulating gaps, that is *pori*, in their substance. Usually such a gap is covered by nothing beyond the attenuated arachnoid membrane, and may extend to varying depths into the white substance, nay, even communicate with the ventricular cavity. It has been and is generally believed that such defects are always congenital, but as Heschl demonstrated that they cannot all be classed among the teratological formations, the possibility of their occurrence in later life should not be lost sight of, indeed every evidence points to the fact that, whether congenital or acquired, porencephaly, as found in some brains, can only have been established after the matured or nearly matured development of the encephalon.

As the well-known author before us states in his preface, the exact mechanism of this deformity has not yet been satisfactorily explained. Believing that the problem can be solved by a careful comparative study of the cases collected in literature, Dr. Kundrat has essayed to solve it, and has been assisted in his undertaking by the opportunity presented to him of studying twelve cases of his own—a no mean number, as the total of recorded instances, aside from his own cases, is only twenty-nine.

The first conclusion at which he arrived was, that while many of the cases constitute as it were "passive" defects, and merit Heschl's definition, others are due to destructive pathological processes, and still others represent rather cicatricial contractures of the brain structure.

As regards the size of the defect, it varies between the possible extremes, it may be slight, involving a single gyrus of the convexity, or great, involving a whole lobe or nearly an entire hemisphere. The author classifies the various defects collectively, designated as porencephalic, under the following heads: 1. Not fully developed defects. 2. Fully developed defects. 3. Such associated with hydrocephalus; and 4. Cicatrized defects. One important fact to be noted is, that the defect never involves the mesal face of the hemisphere alone; it appears to always originate in, and is generally limited to, the convexity and the insula. As a rule, the cavity of the defect does not communicate with the arachnoid space, and where it does so, it communicates with the ventricular cavity at the same time. From this fact Kundrat concludes that, with the limitation that these defects may have their special character from the beginning, Heschl was right in classifying the defects, first, as such not communicating with either the arachnoid or the ventric-

ular spaces; second, such as communicate with the ventricles alone; and third, such as communicate with both; and that he was also right in considering these three groups to represent the successive stages through which the grosser defects have to pass.

Another important feature was observed as a characteristic of all the congenital cases, namely, the convergence of the sulci in the neighborhood of the defect to its margin, these radiating from the latter. Kundrat properly considers this a criterion between the congenital and the acquired forms of porencephaly. A still more pronounced difference between most congenital and most acquired cases is that, in the former, the sides of the gap are formed by the gyri descending from the surface towards the depth of the cavity, while the arachnoid extends taut across the gap. This is either not the case in acquired defects, or so only to a slight degree. The pia mater in the former case is continued into the gap covering the descending sulci; in the latter it ends with the gyri on the gap-border.

Even with the congenital defects, however, it is observed that the fundamental gyri are rarely displaced or distorted, and this permits the inference that, as a rule, the disturbance of development inducing porencephaly occurs at an advanced period of fœtal life or even after birth. As to the nature of the defects, Kundrat refers to the almost forgotten theory of Lallemand, Cruveilhier, and Roger, that attributed them to encephalitic processes. Their view is the one indorsed by Kundrat, and he presents those reasons which those authors failed to present, and which, if at their disposal, would have enabled them to establish the plausibility of their theory.

That the porencephalic defect is occasionally merely a cystic metamorphosis of an apoplectic clot, is proven by the pigmentation observed in some of Cruveilhier's cases. Kundrat believes that just as an apoplectic cyst may undergo transformation into a clear serous cyst in later life, that this must be considered to be all the more likely to occur with fœtal and infantile hemorrhages and softenings, when we bear in mind the greater resorptive and reparative powers of early and fœtal life. A strong argument in favor of the pathological origin of the defect in the manner suggested, is furnished by the fact that bridging strands of nerve-tissue were observed to extend across the gaps in some cases, and further cumulative evidence is furnished by the fact that the majority of the porencephalic defects are formed in the nutritive area of the middle cerebral artery, the area where these processes are most likely to occur.

Taking all these observations in their aggregate, Kundrat concludes that anæmic necrosis is the starting-point of the congenital porencephalic deformities. The counterpressure of the ventricular fluid on the badly nourished district is an additional element in the case, which explains why the basilar parts of the occipital and temporal lobes rarely suffer, for, in the ordinary position of the fœtus in utero, these parts are not subjected to as great a pressure from the ventricular fluid. It is noted in this connection that the most constant lesion found associated with porencephaly is dilatation of the lateral ventricles. In those cases where the white substance, particularly of the internal capsule, was much involved in the defect, descending degeneration extending into the lateral columns of the cord was also found to exist. Here contractures had been found during life. Asymmetry of the cranium was found with the grosser defects; club-hand, unequal development of the extremities, and hare-lip were occasionally observed as associated anomalies.

The work concludes with an interesting discussion of the mental states found with porencephaly. Heschl considered idiocy to be an infallible accompaniment, but this was shown to be faulty by two cases recorded by Chiari and Brodowsky, where there was complete latency of nervous symptoms. In the majority of those cases where the mental defect was unnoticed or feebly marked, the supposition is justified that the brain defect was acquired. As a rule, the degree of mental weakness is proportionate to the extent of the anatomical defect, and the faculty of speech seemed particularly to suffer in many cases. In an appendix, Kundrat polemicizes against Klebs, who expressed the opinion (*Oesterreichisches Jahrbuch für Pädiatrik*, vii.) that such deformities as those treated of in the volume before us, were attributable to intrauterine pressure acting on special points of the skull. As we scarcely believe that Klebs would feel inclined to defend his opinion to-day, in view of the far more plausible explanation furnished by Kundrat, a discussion of the mooted points would be here superfluous.

SOCIETY PROCEEDINGS.[1]

PROCEEDINGS OF THE NEW YORK NEUROLOGICAL SOCIETY.

Seventy-First Meeting, November 1st, 1881.

THE President, Dr. T. A. McBride, occupied the chair; there were present Drs. L. A. Sayre, Wm. Hammond, Sturgis, Detmold, L. H. Sayre, Burchard, Otis, L. C. Gray, Seguin, Spitzka, Farrington, Darling, Amidon, Morton, Beard, Birdsall, Dixon, Dana, J. L. Smith, V. P. Gibney, and a large number of others.

Dr. L. C. Gray, of Brooklyn, then read the paper of the evening, entitled "The Effect of Genital Irritation in the Production of Reflex Nervous Symptoms." An introductory review was given on the subject of reflex disorders in general. To Dr. Sayre, of New York, was given the credit of really having been the first one to call the attention of the profession to the fact that genital irritation might be causative of reflex disorders, although the matter had been hinted at in a desultory way before. All of Dr. Sayre's cases, as well as two reported by Dr. Barwell, of London, in which paralysis was said to have resulted from phymosis, adherent prepuce, or irritated meatus, were then subjected to a critical analysis, as a result of which the author comes to the conclusion that they contain no proof whatsoever that paralysis did so result, but that they were either cases of organic nervous disease with coexisting genital irritation, or else the histories were too imperfect to make any diagnosis permissible. Letters had been received by the writer from Drs. Mitchell, Da Costa, Jacobi, Edes, Putnam, Webber, Miles, Kinnicutt, Seguin, Spitzka, and McBride, in which these gentlemen state that they had never seen a case of paralysis caused by genital irritation. Dr. Shaffer had stated the

[1] Unofficial report.

same thing in a recent article, and Dr. Hammond had never seen paralysis from preputial irritation. The papers of Drs. Otis, of New York, and Bryant, of London, were then alluded to, in which different urinary symptoms in children, as incontinence, retention, difficult micturition, etc., were relieved by circumcision or loosening of adhesions between the prepuce and glans. The relief was conceded, but it was held not to have been proven that the genital irritation was the cause of these symptoms. The shock of the operation, with its concomitant etherization, was capable of giving all of the relief obtained. Four cases were cited from the writer's practice wherein circumcision or removal of adhesions had caused improvement even in organic nervous disease. That these operations upon the genitals give relief in organic disease should lead to caution in the acceptance of the conclusions of Drs. Otis and Bryant as to the effect of the genital irritation in the production of nervous disorders. Might not the cases of these gentlemen have had some other cause for the vesical troubles, and yet have been relieved by the nervous shock of the operation upon the genitals? The writer did not deny that reflex paralysis might occur from other causes than genital irritation, and cited cases of such, and also physiological experiments, to show its possibility. The conclusions arrived at were:

1. That there is no proof that genital irritation can produce a reflex paralysis.

2. That while it is probable that the slight nervous disorders, as incontinence, retention, difficult micturition, erratic movements, and slight nervous disturbances, can be produced by genital irritation, the proof is not yet complete.

3. That operations for the removal of genital irritation may be beneficial even in organic nervous disease.

4. That we should, therefore, remove such genital irritation, if it exist, in any case whatsoever, and thus give our patients the benefit of the doubt.

5. That in all cases of nervous disorders, with accompanying genital irritation, we should not regard the latter as the cause of the former until all other probable or even possible causes have been rigidly excluded.

6. That operations upon the genitals, even when there is no genital irritation present, may prove to be a useful therapeutic measure in certain cases.

Dr. Sayre, in commenting on the paper, admitted that many of his histories were imperfect, but this was due to the fact that they

were only abstracts of the fuller histories in his private records. He agreed with the author that the publications should have been more exhaustive, and intended to rectify his shortcomings in the future. He believed that the other strictures made by Dr. Gray did not apply to the principle he had endeavored to promulgate. He was in frequent receipt of letters from physicians who reported rapid and lasting improvement of similar cases; and that the operation of circumcision was abused and performed needlessly, did not, he thought, militate against its employment where it was indicated. Dr. Sayre proceeded to read some of his records and the letters he had received, tending to sustain his theory that reflex paralysis was occasionally due to adherence of the prepuce.

Dr. F. Otis, being called on by the chair, said that the paper stated nothing new. Like Dr. Detmold, who had been called on to discuss the paper, and who had excused himself on the grounds that he had come to learn and not to teach, he had come to learn, but he regretted to say that he had not been instructed. He had not seen a case of reflex paralysis from preputial adhesion, but he had seen such a large number of cases of reflex nervous trouble from all kinds of urethral and vesical disease, that he was fully prepared to admit the possibility of such cases occurring as Dr. Sayre had claimed.

Dr. Sturgis remarked that while exact proof of the why and wherefore of genital reflex paralysis had not been furnished by Dr Sayre, that Dr. Gray, in contradicting his claims, and yet admitting that the operations had been of temporary or apparent benefit, failed to explain so remarkable a phenomenon as the modification of a central paralysis by a peripheral operation would constitute. His experience with urethral disease led him to coincide with Dr. Otis' statement, that reflex paralysis from preputial adhesion was a possible occurrence.

Dr. Seguin remarked that not only had he never seen such a case, but he saw almost every week cases of organic spinal disease in which some practitioner had performed circumcision either tentatively or with the assurance that it would cure the paralysis. He could simply say, on the strength of his own experience and of those who had a larger experience with children's diseases, that reflex paralysis from affections of the male genitals must be exceedingly rare; he would not deny its possibility, but he had never himself seen a case.

Dr. Spitzka affirmed that, as cited by Dr. L. C. Gray, he had

never seen a case of such paralysis from that cause. He was glad, however, that the reader of the paper had left a provisional loophole for the possible occurrence of these paralyses under exceptional conditions, and he himself could only say with Dr. Seguin, that while he had seen no such cases in human practice, he did not contest their probability. Observations he had accidentally made on the lower animals forbade his arriving at too sweeping conclusions. There was at the present moment a specimen of a gigantic antelope, the eland, at the Central Park, which would be doubtless found in the same condition by the members on the following day as he had seen it in, three days previous. This animal was being castrated by the elastic ligature en masse, around the scrotum, and had paresis of the hind extremities, being unsteady and swaying to and fro with the hind quarters. It was one of the pathognomonic signs of renal disease in horses, to observe paresis of the hind quarters; and horses suffering from such diseases often went "down," as horsemen call it. In one such case, an autopsy verified the existence of nothing beyond a granular nephritis, all organs except the kidneys, particularly the nerve centres, being perfectly healthy. There were certainly many obscure relations between the divisions of the uro-genital apparatus and the lower half of the spinal cord; and inasmuch as certain functional disturbances, established as the rule among certain species of the lower animals, were exceptionally found in the human species, he was prepared to accept the occurrence of genital reflex paralysis as a possible and occasional atavism.

Dr. Burchard cited a number of cases in illustration of the correctness of Dr. Sayre's propositions, and described particularly one case which had been seen by him in conjunction with Dr. McBride, the President of the Society. Here not only paralysis and contracture, but strabismus were radically cured, and remained so up to the present moment, by a simple operation on the adherent prepuce.

Dr. McBride stated that he had no recollection of the case whatever. Dr. Burchard insisted on his point, and assured the President that he would find it on his books.

Dr. Hammond said that it was also true of him as of previous speakers, that he had not himself seen cases of genital reflex paralysis; but he regretted much, that Dr. Gray had not adhered to the announced title conveying the impression that he was to deal with reflex disturbances of other kinds, due to genital irritation, for their existence was unquestionable. He cited a few

remarkable instances, and concluded by stating that he was not at all prepared to deny the possibility of reflex paralysis occurring, like other reflex disturbances, from the cause mentioned.

Dr. Birdsall said that a very salient point had been left untouched by every previous speaker. That was the possible effect which the operation of circumcision, like other peripheral irritations, might have on actual organic diseases of the cord. He cited "nerve-stretching," terming it an experiment not justified by our knowledge of the diseased state at the basis of locomotor ataxia, and which yet might have a momentary effect on the disease.

Dr. Spitzka stated that that point could probably be answered quite definitely, and he had no doubt others would agree with him in the statement that these operations either had no effect or did harm in cases of organic disease. In justice to Dr. Sayre, he would say that he had recently had under his care two cases of organic spinal disease, for which the operation of circumcision had been suggested by physicians out of town, and declined or condemned by Dr. Sayre. In both cases it had been performed; in one, no effect was produced; in the other, injury resulted from the child's long confinement, and the surgical affection.

In mentioning the experience of comparative pathologists, and particularly the case of a mare with reflex paraplegia from nephritis, he wished to state that there were lesions present which he had omitted to mention, namely, a few cysts in each ovary, but to this he attached no importance.

Dr. Seguin had known parents to report temporary good effects in organic spinal disease.

Dr. Sayre thought that there it should produce either no result or do harm.

Dr. Gray, in closing the discussion, regretted that Dr. Otis had not been "instructed," and stated that he had not entertained the ambition of instructing Dr. Otis, and was not responsible for the latter's disappointment. For the rest, he must say that none of his criticisms appeared to be invalidated; all who had discussed his paper had either sustained his final conclusion, or failed to disprove it, and all had admitted that the operation was frequently needlessly performed. He did not, however, wish it to be understood that the operation should not be performed for surgical reasons, whether spinal disease existed or not.

The Society then adjourned.

Seventy-Second Meeting, December 6th, 1881.

Dr. T. A. McBride presided.

The minutes having been read and approved, Dr. T. H. Burchard made a public correction of his statement advanced at the previous meeting, that the President of the Society had been one of the witnesses to the operation he described, and also that Dr. McBride had not concurred in his diagnosis of the case.

The chief business of the evening was the reading of the paper on "Intermittent Spinal Paralysis of Malarial Origin," by Dr. V. P. Gibney.[1]

Dr. M. P. Jacobi expressed herself as being greatly in doubt as to the real nature of the case which Dr. Gibney had referred to as seen in conjunction with her, particularly as it differed from the cases described by Erb, in, first, that, the paralysis did not come on suddenly; second, that it did not intermit; third, that it did not terminate in sweating; fourth, that there were marked sensory disturbances, in the shape of great sensitiveness to slight touches, while firm rubbing was well borne, and fifth, that the paralysis of motion was not complete. Had it not been for the fact that the electrical reaction was diminished in certain of the muscles, she would have considered it a case of rheumatic paralysis.

Dr. Seguin agreed in all points with the preceding speaker. He believed the particular case referred to, to present rather a relapsing than an intermittent character, and that it would, in this and the other cases, be more correct to say that the malaria caused the fever and the fever the paralysis than to consider the paralysis the direct result of the malarial poisoning. The speaker then read from a paper the history of a case which he designated one of "intermittent post-malarial hemi-numbness."

Dr. A. D. Rockwell, in connection with Dr. Seguin's case, related the history of a man who suffered from intermittent hemiplegia; the attacks were of long duration at first, but finally assumed a regular type. In one attack the patient died, and gross lesions were found in the brain on the autopsy, the chief of which was the presence of an exudation of "organized lymph" overlying the pia of the cerebral convexity. Dr. Rockwell stated that he had seen two unquestionable cases of malarial paraplegia.

Dr. L. C. Gray dwelt upon the fact that Dr. Gibney's case was

[1] See the first article in the Department of Original Contributions, of this number.

more of a relapsing than intermittent type. If a case did not have any characters of periodicity, it was hardly right to say it was malarial. The speaker had never seen a case of paralysis due to malaria, but he had seen cases which apparently had such an origin. The history of such a case was then related. Dr. Gray thought that in the next ten years the attempt would be made to show that malaria is a neurosis. Already several authors had shown a leaning in that direction.

Drs. Birdsall, Seguin, and Putnam-Jacobi made some remarks with regard to the electrical reactions of the case selected by them for reference, Dr. Seguin remarking that the paralysis was post-febrile, and due to a granular disintegration of nerve-cells, in its turn due to the fever.

Dr. Gray rejoined, by saying that he could not agree with Dr. Seguin as to the propriety of calling these cases post-febrile, and regarding the granular disintegration of nerve-cells as due to fever. A fever is not a distinct entity, a something aloof from molecular actions, and independent of them. It is the direct result of molecular disturbance! When a patient manifests fever, after a while becomes paralyzed in one extremity, death follows, and the microscope shows a granular disintegration of certain anterior horn-cells, and nothing else abnormal is found, it certainly seems more logical to regard the fever as the result of the cellular disturbance, and it is rather a wide assumption to regard the cellular disturbance as the result of the fever, when in reality we have nothing else to look to for the causation of the febrile manifestations.

The Society then adjourned.

Seventy-third Meeting, January 3d, 1882.

The President, Dr. T. A. McBride, occupied the chair.

There were present Drs. Morton, J. C. Peters, Wm. Hammond, Hardy, L. C. Gray, Farrington, Harwood, Amidon, Dana, Weber, Spitzka, Gibney, M. P. Jacobi, Seguin, Birdsall, and others.

The minutes having been read and approved, Dr. H. D. Rockwell, who had been duly recommended for membership at the preceding meeting, was elected a member, while Drs. L. Putzel and E. W. Burnett were reported favorably by the Council.

Dr. E. C. Seguin read the paper of the evening on the subject of the curative influence of iodide of potassium over those nervous diseases which are not of syphilitic origin.

The reader opened with an apology for the incompleteness of his literary references, a mention of which would have shown that iodide of potassium had been extensively used in nervous diseases, irrespective of their etiology, long ago. The greater part of the paper consisted of histories of cases, which latter the reader divided into groups, according as the diagnosis of a non-syphilitic intracranial lesion had been established by the autopsy or by the history of the case alone. In three cases, where the nervous symptoms appeared to be rapidly relieved by the use of the iodide of potassium, no syphilitic lesion was found. One very interesting case was that of an intracranial tumor complicated by hydrocephalus, usure of the cranial walls, and extrusion of the lateral sinus under the scalp. A detailed description of the methods employed in determining the nature of another neoplasm was not given, although this would doubtless have been of great interest, in view of the fact that "tree-like amyloid masses" were found around the blood-vessels, with amyloid deposits elsewhere. In speaking of a case of dementia paralytica, preceded by hemi-lateral symptoms, the slow progress of the case was cited as an evidence conflicting with the idea that it might have been syphilitic.

Dr. Wm. Hammond agreed with Dr. Seguin in his belief that the beneficial effect of iodide of potassium over a case of nervous disease did not prove its character to be syphilitic; he had used the drug in nervous diseases recognized to be non-syphilitic, many years ago, and had repeatedly referred to this in his work and his papers.

Dr. Amidon believed that the good effects of iodide of potassium were due to its effect in decreasing the blood-pressure.

Dr. Weber could not agree with such an inference; he believed that the diuresis produced by large doses of the iodide might be a factor in accounting for its good effects, as collateral hyperæmias and œdemas around tumors and other foci of disease might be relieved by profuse evacuations of any kind. He doubted whether we were justified in taking the assertions of patients that they had not had syphilis, as evidence that a given nervous affection was not of a syphilitic character; patients deceived, and often unconsciously, on this head, and he had evidence which convinced him that a careful examination might fail to establish the existence of latent luetic disease.

Dr. Morton stated that a large number of his cases had been cured or relieved by iodide of potassium, and his observations

confirmed those of Dr. Seguin that these cases were not necessarily of a syphilitic nature. Dr. Morton had found grave symptoms of spinal disease, excepting absence of the tendon-reflex, concerning which he expressed the view that it was an evidence of descending degeneration, to disappear under the iodide.

Dr. Seguin, in closing the discussion, admitted the plausibility of Dr. Weber's explanation, and thought the day was not far distant when a specific anti-syphilitic effect of the iodide would be questioned. He would insist that the statements of his patients, from their own position and their recognition that a frank admission was a condition of proper and successful treatment, were to be received as proof, especially as a careful objective examination failed to reveal any evidence of specific disease.

Dr. Hammond called the attention of the Society to the death of Dr. Diodato Borelli, of Reggio, Italy, and submitted a copy of of that neurologist's latest work to the members for inspection.

Dr. J. C. Peters mentioned having received a communication from a transatlantic correspondent, asking for information on the subject of hydrophobia. He moved the appointment of a committee on that subject by the Society. Drs. Weber and Spitzka expressed themselves adversely to the motion, as the communication was not official.

Dr. Hammond suggested that, as Dr. Peters was the recipient of the letter and interested in the subject, that he be appointed a Committee of One.

A motion to that effect was seconded, and carried unanimously.

The Society then adjourned.

PROCEEDINGS[1] OF THE NEW YORK MEDICO-LEGAL SOCIETY.

One Hundred and Seventy-fifth Meeting, November 2d, 1881.

THE President, Dr. C. S. Wood, being in the chair, the minutes of the last meeting were read by the Assistant Secretary and approved by the Society.

[1] Unofficial report.

Drs. L. C. Gray, of Brooklyn, and H. H. Kane, of New York, having been recommended for election by the Executive Committee, the Secretary was directed to cast the vote of the Society in their favor; which was done, and they were declared elected.

The paper of Dr. T. D. Crothers, entitled "The Trance State in Inebriety: its Medico-Legal Relations," was then read by its author, who claimed that a whole series of phenomena of alcoholism were in reality due to trance, and that no study had been hitherto made of this phase of the disease. Dr. Crothers stated that the peculiar dazed and absent-minded states he had observed in inebriates had no relation to epilepsy, but he did not undertake to prove by any facts that, if not epileptic, they were what he claimed, namely, trance states. Their chief features were blanks of the memory, which in ten of his sixty-two cases were so prominent as to be termed "fits of insanity" by the patient's friends; in twenty-eight, they were less pronounced, and considered to be merely "drunken fits," and in the remainder still more obscure. He made a distinction between alcoholism and inebriety, asserting that the trance states occurred only with the latter condition which was a positive physiological disorder and not a combination of habit, vice, and sin. From the definition given by the reader of the paper, any mental state in which certain brain functions were arrested, while others were active, was a trance state. Illustrative cases were cited, the first of an inebriate who after years of indulgence complained of blanks, during which he lost all sense of his whereabouts, and on returning to himself found himself in strange places, another of a commercial drummer who had blanks of two days' duration, during which he transacted business properly and yet had no memory thereof subsequently. The third instance was a most remarkable one of a physician who in the trance state entered a church, prayed, and rejoiced his neighbors by his conversion to religion. Afterwards he had no recollection of the circumstances, and continued as much an infidel as before. Quite analogous was the case of a United States Senator who in a "trance state" appeared at a temperance meeting, signed a pledge never to drink again, but failed to keep it and denied all knowledge of the occurrence. The frequency with which inebriates sign temperance pledges and break them, as well as the habit they have of getting up and addressing temperance meetings, was accounted for by Dr. Crothers on the theory that these actions were performed in trance. Rape and other sexual crimes were committed by inebriates in this condition, and in one case, that of

a prominent lawyer, suicidal impulses and suspicions of the marital fidelity of his wife occurred in the "trance state" alternately, and culminated in his making contradictory wills. Another patient had been repeatedly incarcerated for horse-thefts, he would get into a wagon, drive away with the horses, sell them and afterwards go around the city with the real proprietor, pretending to assist in their search. On some occasions he manifested cunning in concealing the theft, at others he appeared to commit them without regard to consequences. At times he was found "impulsive and laughing loudly," he died in prison, a few months after his last conviction, of a pulmonary trouble. A number of other similar histories were cited, their medico-legal bearings analyzed, and the doctor closed with the following conclusions: 1st, Inebriety must be recognized as a condition of legal irresponsibility to a certain extent, depending on the character and circumstances of the case, and the general mental integrity displayed. 2d, All unusual acts or crimes committed by inebriates, either in a state of partial coma or alleged amnesia, which come under legal recognition, should receive thorough study by competent physicians before the legal responsibility can be determined. 3d, When the trance state is established beyond doubt, he is both legally and practically (!) irresponsible for his acts during this period. And each case should be measured by the facts of its individual history. 4th, Inebriety is a disease requiring physical means in the treatment. Society demands of the patient that he use diligence to recover, and so far as he may neglect this, both himself and the community are responsible. 5th, It is the duty of the State to provide asylums and encourage private enterprise to furnish the means and appliances for restoration. 6th, The inebriate and the community must be held responsible for his acts and their consequences, as well as the causes and conditions leading to them, then the victim will be forced to avail himself of every means for prevention, restoration, and recovery. Science, Dr. Crothers claimed, was much behind on this subject.

The President, in opening the discussion, stated that he had been struck by the existence of similar states in women, addicted to excessive tea drinking.

Dr. Spitzka stated that he would like to ask the reader of the paper two questions. As far as he could gather, the reports were all obtained from third parties. His first question was, whether Dr. Crothers had ever himself seen patients in this alcoholic "trance"?

Dr. Crothers replied that he had.

Dr Spitzka reiterated that in that case the attendant phenomena had not been described by the doctor in a convincing manner. His second question was, whether the hack-driver referred to had exhibited any inequality or anomaly of the pupils, the facial folds, or tremor of the tongue and hands?

Dr. Crothers replied that he had manifested none of these symptoms.

Dr. Beard took the floor. His remarks were not of such a nature as to permit the reporter to follow him, but he read an extract from the *Journal of Mental Science*, which he claimed showed the awakening interest manifested by Europeans in "unconscious states." The extract referred to the discussion by Drs. Ashe, Mercier, Maudsley, Clouston and Bucknill, on a paper of Dr. Motet's bearing on the medico-legal importance of intemperance and "moral shocks."

The doctor then passing to the consideration of the fall of a Swiss mountain and to astronomy, a point of order was raised, and he concluded his remarks.

Dr. Spitzka, without desiring to introduce personalities into the discussion, remarked that it was a pity the preceding speaker had not turned back a few pages in the *Journal of Mental Science* and read the extract relating to the collapse of Dr. Beard's demonstration in England, and how Dr. Beard had failed to come forward with a paper he had announced before a scientific body. As to the paper read that evening, he regretted to say that, instead of science being behind in its views on the question of alcoholism, it was the paper which was far from being up to the science of the day. He would call the attention of the reader to Magnan's work, in which he would find such of his cases as had the strongest semblance to reality, carefully described under the heads of alcoholic stupor and alcoholic epilepsy. As to the hack-driver's case, that was an evident example of a well-established and well-known form of disease, namely—alcoholic paralytic dementia. He was surprised to find such a common manifestation of alcoholism as tremor reported absent by Dr. Crothers. He was still further surprised to find such ordinary everyday and characteristic symptoms of chronic alcoholism as delusions of marital infidelity, morbid suspicion, inconsistences of behavior, stupor, and amnesia erected into trance-like states. Nowhere in the paper did the author give any evidence that he made that distinction between dipsomania, chronic alcoholism, and acute alco-

holic delirium, which was the A B C of our knowledge of the subject. The speaker concluded by regretting that the first time in years that so important a matter was brought before the Society it was brought forward in so imperfect a form, and coupled with a term "trance," which in the past history of the Society had certainly acquired no good odor.

Dr. Girdner indorsed the preceding speaker's remarks, and gave an analysis of the ordinary effects of alcohol on the mind, which he referred to dynamic interferences. He concluded by objecting to the acceptation of such views as Dr. Crothers advanced until they could be better substantiated, as their acceptation would involve some remarkable medico-legal consequences. He did not believe that alcoholism, aside from its effect in producing chronic insanity, should constitute an excuse for crime. He thought that a crime committed in a drunken excess should be punished like any other crime, because the person, by his own agency, put himself in a proper condition to commit such crime.

Mr. Eller, of the New York Bar, stated that the view last announced by the preceding speaker was not a sound one in law; it was certainly not the one entertained by lawyers. He alluded to the great injustice done by police justices in sending persons to the workhouse on the complaint of any two (possibly) conspiring persons, that such person was an "habitual drunkard." He thought that term required definition.

Dr. Crothers closed the discussion, thanked the Society for the attention that had been paid to his paper, and reiterated that the subject he had brought before the Society was a new one.

The routine vote of thanks was unanimously passed, and the Society proceeded to the nomination of officers.

The following gentlemen were nominated for the presidency: O. H. Palmer, C. E. Pratt, A. G. Hull, and Clark Bell; Austin Abbott having declined. For the First Vice-Presidency, C. A. Leale, M D., and E. H. M. Sell, M.D.; E. C. Spitzka declining. For the Second Vice-Presidency, D. S. Riddle, E. T. Gerry, A. J. Delaney, and M. S. Isaacs were nominated. G. W. Wells, M.D., C. P. Bull, J. F. Chauveau, M.D., R. S. Guernsey, E. C. Harwood, M.D., C. A. Doremus, M.D., and W. R. Birdsall, M.D., were respectively the sole nominees for the offices of Secretary, Assistant Secretary, Corresponding Secretary, Librarian, Treasurer, Chemist, and Pathologist, Max F. Eller having peremptorily declined the nomination for Librarian, and E. C. Spitzka, M.D., that for Pathologist. For two vacancies in the Board of Trustees, Wm.

A. Hammond, M.D., C. S. Wood, M.D., J. T. Davies, and D. S. Riddle were nominated. Austin Abbott, Wm. A. Hammond, M.D., R. L. Parsons, M.D., R. J. O'Sullivan, M.D., J. S. Wight, M.D., and J. G. Johnson were put in nomination to fill two vacancies on the Permanent Commission, and R. L. Parsons, M.D., and Wooster Beech, M.D., were nominated to fill the unexpired term of the deceased R. R. McIlvaine, M.D., of the same body.

After a protracted and heated discussion as to the propriety of indorsing the only physician who had been nominated for the office of Coroner of the County of New York, the opinion being generally expressed that the Society could do so consistently with its principles, the Society adjourned.

One Hundred and Seventy-Sixth Meeting, December 7th, 1881.

THE President, Dr. C. S. Wood, occupied the chair; the minutes of the last meeting were read and approved. Dr. William L. Hardy, City Physician, having been recommended for membership by the Executive Committee, the Secretary was directed to cast the vote of the Society in his favor, and Dr. Hardy was declared elected.

The paper of the evening, by Dr. J. G. Johnson, of Brooklyn, on some medico-legal points involved in the use of anæsthetics, was attentively listened to. Among the chief points to which attention was directed by the reader was the possibility of false charges being made against surgeons and dentists by women who had been chloroformed. This subject is not a pleasant one, but that is no reason why it should not be investigated. If it is a fact—and there is no doubt about this—that women when being put under chloroform, are liable to those erotic sensations which they experience from sexual intercourse, the sooner the fact is generally known the better. It is just the mystery that surrounds such facts that permit such monstrous hardships to physicians as those mentioned to be a possibility at all. Of course it is obvious enough to any one that it is a delicate matter to inquire into the subjective sensations of woman; but if these subjective sensations take the practical form of a charge of rape, two months in jail, and a trial by jury, they pass from the domain of sentiment and enter that of stern reality.

In the *Medical and Surgical Reporter* of January 12th, 1877, Dr. N. L. Folsom, of Portsmouth, N. H., relates the following case:

"In 1854, a clergyman's sister came to my office for the purpose of taking ether and having a tooth extracted, and brought her brother's wife with her. I began to administer the ether to the patient, and whilst renewing it she got away from me and seemed alarmed and offended. I did not attempt to compel her to breathe any more ether, but urged her to take it, and so also did her brother's wife; but she would take no more. She had the impression (so her brother told me) that I attempted to violate her, and that his wife assisted me. It was a long time afterwards before she would fully give up that she was mistaken in the matter."

In the *Boston Medical and Surgical Journal* for November, 1858, page 287, is the account of the trial of a dentist in Montreal for an alleged attempt to commit rape upon one of his patients to whom he had given chloroform. One of the witnesses for the defense testified that his own wife was fully impressed with the belief that she, too, had been violated by the prisoner, under the influence of chloroform; and she persisted in this delusion, notwithstanding that her husband was present during the whole period of anæsthesia. In spite of this and other testimony, the jury brought in a verdict of guilty of an attempt to commit rape.

The question of using anæsthetics to detect simulation was next discussed.

It is an interesting fact that no matter how much you may inculcate upon a patient that he shall not speak, he will invariably answer when coming from under the effects of chloroform, and thus may feigned deafness be shown up in its true colors.

The stiff knee, apparently permanently anchylosed, will bend, and the curved spine, that they have learned to simulate so well that it will remain curved in sleep, becomes straight; and there is not a simulated disease but can be discovered by chloroform.

Has the surgeon any right to make use of this means? With the arrested party the reader thought decidedly not. Every party is to be presumed innocent till proved guilty, and the law will not compel a person to criminate himself. It would seem that the old opinion holds that a prisoner's person was sacred, and that evidence obtained in that way would be ruled out by the courts if obtained against the will of the party. So far has this principle been carried that the Court of Appeals has decided that a judge cannot even make a prisoner stand up in his seat for the purpose of having a witness on the stand identify him. As for enlisted persons, the army officer would probably enforce it, claiming *inter*

arma leges silent: and besides, the party has voluntarily placed his life under the orders of his superior by enlisting, and absolute obedience is the law of the service known to the recruit beforehand. The question becomes interesting to the medical expert who may be sent by order of court to make an examination of a case—a special damage case. He may feel that the impairment is simulated. Has he any right to make an examination under an anæsthetic, to ascertain whether the claim is honest or not? He is expected to testify to the truth. How can he testify if he is not allowed to obtain his facts?

This right to use chloroform against the will of the party upon whom it is to be used, becomes an interesting question, and has been brought before the courts. The reader's invariable custom, in these cases, was to request that the patient may be placed under the effect of an anæsthetic by her attending surgeon, that he may examine the case in his presence and then leave with them the responsibility of the refusal. If the injury is feigned, the refusal will injure them in connection with other evidence brought forward in such cases. The reader closed with some general conclusions relating to the cases in which ether should not be employed.

Owing to the fact of its being the annual meeting of the Society, the discussion was postponed, and the Society proceeded to the election of officers by ballot. It was noted by some that by accident the names of Mr. Max F. Eller and Dr. E. H. M. Sell, who had peremptorily declined the nominations for Librarian and Vice-President, unlike that of other nominees who had declined, were printed on the list of the nominees; Mr. Eller was re-elected to a position he had so long and ably filled. Dr. Wm. A. Hammond insisted on the withdrawal of his name as that of a candidate for any office.

Considerable interest was manifested in the election, and as it resulted in a tie, with reference to the presidency, the list of officers for the coming year could not be reported on.

After adjournment, the members partook of a collation, addresses being delivered by Messrs. Bell and Ellinger, and Drs. Hammond and Sayre.

One Hundred and Seventy-Seventh Meeting, January 5th, 1882.

The President, Dr. C. S. Wood, occupied the chair, several of the officers newly elected at the preceding meeting took their seats. The minutes of the preceding meeting were read and approved.

The Executive Committee reported in favor of holding the annual entertainment that evening, and sanctioned the course taken by the Committee on Entertainments appointed by the Society. It further recommended that, in view of the lack of method in the accounts of past treasurers and secretaries of the Society, which had in established cases led to unjust dealings with members in good standing, that those who had resigned or been dropped from the roll be permitted to resume their standing on payment of one year's dues, provided they had paid the initiation fee, and that those who had not paid the initiation fee, be entitled to the same privilege on payment of one year's annual dues *plus* the initiation fee as it stood at the time of their alleged election. Finally it was reported that, owing to misapprehension, the Committee on Entertainments had been directed to change the date of the annual dinner, and that this action had been rescinded by the Executive Committee. The report was adopted.

The President then called for the reports of officers of the Society. The Curator and Pathologist, Dr. E. C. Spitzka, stated that inasmuch as under the new Constitution and By-Laws it was the duty of his office to report solely on pathological specimens submitted to him officially, and as none had been so submitted, he had no report to make. The Chemist, Dr. Chas. A. Doremus, being called on for his report, stated that he was in the same position.

The President then declared the election in order, being the business left over unfinished from the last meeting. While the tellers were arranging the preliminaries, Dr. Spitzka asked, as a matter of information, whether the resolution of the Executive Committee relative to the privilege of members to resume their good standing, on complying with certain financial conditions, had any binding force on the Secretary? He asked this question because Mr. Crosby, member of the Bar, and then present, had informed him that the Secretary had refused to receive his dues, and thus prevented him from voting. Dr. Wells replied that this was incorrect, no such dues had been refused. Mr. Crosby rose and confirmed Dr. Spitzka's statement, on which Dr. Wells admitted it, excusing his previous statement by the fact that he had believed another Mr. Crosby to be referred to. He added that he declined Mr. Crosby's proffered dues because there was no record of that gentleman having paid his initiation fees. A very intemperate dispute occurring between the Secretary and the member, Mr. Delano C. Calvin rose to a point of order, Mr. Crosby apolo-

gized for his vehemence, but succeeded in justifying it. Mr. Calvin read a portion of the Section of the By-Laws, relating to the election of officers, and concluded that the pending election was not legal, but Mr. Willis making a motion that the election be proceeded with, which was carried without a single dissenting vote, the members proceeded to deposit their ballots.

Mr. Clark Bell was elected president by a large majority; this declaration caused a decided sensation. Dr. Hammond, and ex-Judge Meyer S. Isaacs were elected trustees.

The retiring president, Dr. C. L. Wood, begged to be excused from delivering his valedictory, as the hour was late and there was other business demanding attention. Mr. Bell then went behind the president's desk and spoke a few words, thanking the Society for the honor it had conferred on him, and stating that at the next meeting he would deliver an inaugural address. He presided for the balance of the evening. Dr. Harwood then presented a protest against the elections. It was signed by several members of the Society, and set forth that they took the same view of the proceedings as Mr. Calvin, and protested against the officers declared to have been elected taking their seats. Dr. Bradley moved that the protest be referred to a committee of three, and that disposition was finally made of it: Mr. Clark Bell, as president, naming the committee, Dr. William A. Hammond, Mr. Yeaman, and ex-Judge Hull.

The election of a President and several minor officers accomplished at this meeting, enables the reporter to furnish the following list of officers as elected for the year 1882: *President*, Clark Bell; *1st Vice-President*, Chas. A. Leale; *2d Vice-President*, D. S. Riddle; *Secretary*, G. W. Wells; *Assistant Secretary*, Chas. P. Bull; *Treasurer*, E. C. Harwood; *Corresponding Secretary*, J. F. Chauveau; *Librarian*, M. F. Eller; *Curator and Pathologist*, W. R. Birdsall; *Trustees*, Meyer S. Isaacs and W. A. Hammond; *Permanent Commission*, Austin Abbott, R. J. O'Sullivan; to fill the unexpired term of the deceased J. R. McIlvain, M.D., Dr. Wooster Beach was elected.

The Society adjourned while the protest was being commented on, and the members took part in the annual dinner which was served at the Gilsey House.

QUARTERLY REPORT ON PROGRESS IN NEUROLOGY.

ANATOMICAL CONTRIBUTIONS.

1. Matthias **Duval.** La Corne d'Ammon (Morphologie et Embryologie). Par Matthias Duval. Arch. de Neurologie, No. 6 (October).—2. C. v. **Monakow.** Ueber einige durch Extirpation circumscripter Hirnrindenregionen bedingte Entwicklungshemmungen des Kaninchengehirns. Arch. f. Psych. u. Nervenkrankheiten, XII.—3. **Pfleger.** Untersuchungen ueber das Gewicht des menschlichen Gehirnes. Jahrb. f. Psych., III., 1 and 2.—4. **Spitzka.** The Functional and Morphological Relations of the Cerebellum. Chicago Med. Review, July 5th, 1881. —5. **Spitzka.** The Architecture of the Oblongata. New York Med. Journ., September, 1881.—6. Burt G. **Wilder.** The Brain of the Cat. The preliminary account of the gross anatomy, with four plates. (Read before the American Philosophical Society, July 15th, 1881.)

2. This article contains the accounts of experiments made upon two rabbits, with the view of determining the relations between certain sensory areas of the cortex and the infra-cortical ganglia, in the hope of complementing the recent researches of Munk. At first, the method of Flechsig was made use of, and fœtal brains at different ages were examined. The author merely says of these results, in a general way, that they partly agreed with the observations which are to be described, and partly completed the latter. In both rabbits a certain small portion of the cerebral cortex was removed with scissors. The first animal was killed about nine months after, the second after eleven months.

From his experiments, the writer adds to Gudden's assertion, that the normal development of the thalamus opticus depends upon the integrity of the corresponding cortical field, the further statement that by the extirpation of circumscribed portions of the

rabbit's cortex, isolated atrophies of nuclei of the thalamus can be brought about. He also states that Munk's region F, which has been regarded as the sensory centre for the ocular protective apparatus, must have more extended functions, inasmuch as its destruction leads to degeneration of tracts leading into the spinal cord. In the second rabbit, a spot of the cortex answering to Munk's centre of vision, Zone A, in the dog, was removed. This corresponds to centre nine of Ferrier and Fürstner, irritation of which produces closure of the eyelids. After killing the animal, the lateral stratum of the outer nucleus of the thalamus was found entirely undeveloped; the rest of the nucleus was normal. The corpus geniculatum externum was very greatly atrophied. The portion of the internal capsule corresponding to these atrophied nuclei was entirely wanting. One left anterior bigeminate body was slightly flattened. One transverse peduncular tract had entirely disappeared. One optic nerve was also somewhat smaller than the other. The tract of degeneration throughout the corona radiata and the inner capsule corresponded to those in man and the higher mammalia which lead from the pulvinar and the corpus geniculatum externum into the occipital region—in other words, the fibres of Gratiolet. As in both rabbits the internal geniculate body had remained intact, the writer believes, as do Gudden, Fovel, and others, that this ganglion has no intimate relation with the retina.

3. This is one of the most cautious and thorough studies of a difficult subject undertaken within the last few years, and compares favorably with the labors of Bischoff, Meynert, and Weissbach, whose results are collated by the author with his own, and whose conclusions he makes some important modifications of. His final summary is: First, that there is no marked difference between the relation of the brain-weight to the cranial capacity in the adult between the twentieth and sixtieth year: a decided decrease of the brain-weight occurs after the sixtieth year, and a still more pronounced decrease after the seventieth. In all these respects, both sexes appear to be equal. Second, the absolute brain-weight increases as the body-length and trunk-length increase; third, the relative brain-weight decreases with increase of stature: this decrease is more constantly expressed in the isthmus and cerebellum than in the cerebrum; fourth, the absolute increase in weight accompanying increase in stature is not an equal one as regards the different brain-segments, it is a constant factor only in the case of the cerebrum; fifth, the skull cavity of the female is smaller than that of the male, in proportion to the

body as well as the trunk-length; sixth, the female brain has an absolutely and relatively lesser weight than the male brain; seventh, in comparing the weight of various cerebral segments in the sexes, the greatest difference is found in the cerebrum, the least in the cerebellum; it is also found so in those dying of acute diseases; the cerebrum is relatively greater in the male, the cerebellum and isthmus in the female; eighth, the female brain appears to be a little heavier than the male, in proportion to the corresponding skull-cavity dimensions; ninth, even in this respect, it is found, however, that this relative greatest weight is due to a preponderance of the isthmus and cerebellum; tenth, the sexual difference in brain-weight is greatest in those dying of acute diseases, reaching as high as fourteen per cent; eleventh, the sexual difference is lessened by chronic disease in the sane and in insanity, being ten per cent in the former and eight per cent in the latter; twelfth, the male brain loses more in weight with insanity than the female brain, and this relation remains unshaken by excluding the cases of paralytic dementia.

4. The author of this provisional communication believes that the elucidation of the functions of the cerebellum must rest upon its demonstrated anatomical connections, rather than on its reaction to experimental and pathological injuries, and that, as in the case of every other centre, a study of its anatomy in the adult human brain is advantageously premised by a brief review of its relations in lower animals. The great anatomical preponderance of the cerebellum in man is a late acquirement; its connections and its mass have been successively apposited on a very simple rudiment in the early embryo. The chronological course of this apposition is a rather faithful reproduction of the phylogenetic phases, observed in a series of vertebrates ranging from the urodelous batrachia to man. In the first place, the statement is to be corrected, which is to be found in some physiological text-books as well as several of those semi-anatomical, semi-metaphysical treatises on the brain with which the book-market has been flooded within the past few years, that the cerebellum preponderates in lower animals, and becomes reduced in higher ones. This is grossly erroneous. Whether the absolute size of the organ, or its weight relative to the body, or relative to that which constitutes the only approximately constant element in the cerebro-spinal axis, the area of a transverse spinal section at the level of the foramen magnum, or its complexity of structure be taken as the gauge of comparison, the highest development is found in man and the anthropoid apes, the next highest in the elephant,

cetacea, and seals, and thence it is found less in the descending scale of vertebrates. The cerebral overlap conceals the cerebellum more and more as we pass up in the scale, and the latter therefore becomes invisible from above in man and animals near man in their zoological or intellectual position ; but that is not due to a lesser development of the organ in those animals. The cerebrum being *ab initio* a more massive organ than the cerebellum, and both increasing together, say, at the same ratio in relation to the bulk of each, there must be a greater absolute increase of the cerebellum at each stride made; hence the progressively greater concealment of the cerebellum, notwithstanding the increased growth of this organ as we pass up in the scale.

The ganglionic masses situated within the medullary nucleus of the cerebellum, namely, the fastigial, dentated, and accessory nuclei, are compared to the corpus striatum of the cerebrum, being, as it were, subcortical depots; but morphologically the analogy is not perfect; for while the cerebral ganglia are cut-offs, as it were, from the same gray mass which constitutes the cortex, the cerebellar nuclei are importations dragged into its substance by afferent fibres.

The important fibre-masses connected with the cerebellum, and entering its white substance, constituting processes of the latter, as it were, are (1) the processus e cerebello ad cerebrum of older anatomists, the brachium conjunctivum of German anatomists, and for which, as it corresponds to the anterior peduncle of the cerebellum, he adopts the brief and expressive designation of Wilder: præpedunculus; (2) the processus ad pontem, or brachium pontis, for which he adopts from the same source the term pontibrachium; (3) the auditory nerve root; (4) the restiform column; (5) the trapezium. All of these tracts, except the first and second mentioned, are afferent to the cerebellum. The first and second are efferent as far as the cerebellum is concerned, but afferent to the cerebrum. The important fact is thus seen that, taking the brain as an entity, all the cerebellar tracts are centripetal, and a direct motor innervation is to be entirely excluded from the functional possibilities of this organ.

The restiform column is chiefly derived from the posterior columns of the spinal cord through the remarkable decussation which is mediated through the olivary nuclei, described by Meynert. This derivation has been questioned by Flechsig—a fact which to the author's mind is incomprehensible. Few things are, he claims, clearer than this connection. It is supported by the well-known fact that the olivary nucleus gains in size and com-

plexity in strict parallelism with the nucleus dentatus of the cerebellum. In addition to this, the restiform column owes much of its mass to the direct myelo-cerebellar tract (directe Kleinhirnseitesstrangsbahn). The fibres of the restiform column go to the cortex of the cerebellar hemisphere. Derived as its fibres are from the columns of Clark through the direct lateral myelo-cerebellar tract on the one hand, and the posterior columns of the spinal cord on the other, developing centripetally in the embryo and degenerating centripetally under pathological circumstances, he looks upon this tract as one conveying molecular oscillations, determined in sensory end organs, to the cortical expanse of the cerebellar hemispheres. The precise area where the restiform fibres abut is the dorsal surface of each hemisphere. A small portion passes to the interior of the nucleus dentatus, according to Stilling On the inner side of the restiform column proper, and reckoned by many as a division of that fasciculus, is a centripetal conducting tract known as the inner division of the posterior peduncle. The author believes it to consist almost exclusively of fibres running in the ideal continuation of the columns of Burdach, and recognized by Flechsig as a distinct tract in the embryo. He fails, however, to localize it accurately, as he fails to discriminate topographically in other parts of the oblongata, in his great work. The fibres of this tract go in part or altogether to the nucleus Fastigii (according to Stilling). It is not positively ascertained whether they are connected with the fibres of the posterior column or not. In several of his preparations, he finds that they originate from among the cells of the nucleus of Burdach, and, to a lesser extent, from the nucleus of Goll. In area, the fasciculus represents only a fraction of the area of the column of Burdach; but this is not a reason for doubting a continuity. The greater portion of the column of Burdach decussates through the olives before the origin of the fasciculus is reached. Thus, while the lateral myelo-cerebellar tract represents a direct uninterrupted communication between the sensory periphery and the hemisphere of the cerebellum, the decussating fibres of the column of Burdach, an interrupted projection of the same periphery in the same cortical expanse, the inner division of the cerebellar peduncle, represents an interrupted non-decussating tract to the nucleus Fastigii.

No relation seems to exist between the columns of Goll and the cerebellum. Through the so-called sensory decussation of Meynert, this tract passes to the cerebrum via the stratum intermedium.

The auditory nerve root sends fibres to both the nucleus

dentatus and the nucleus Fastigii, in man more to the former. The fibres do not generally pass uninterruptedly from the nerve to the cerebellar nuclei, but are interrupted in the auditory nuclei; some decussate within the oblongata, some within the white substance of the cerebellum. One fact cannot fail to strike the observer as noteworthy, namely, that the fibres passing from the auditory nuclei to the cerebellar ganglia are far more numerous than those of the auditory nerve itself. This relation reminds one of the one existing between the great mass of the anterior half of the corona radiata and the diminished bulk of the continuing pes pedunculi, and points imperatively to an important connection existing between the internal ear and the cerebellum.

The trapezium joins the restiform column on its entry into the cerebellum; its fibres appear to be derived from the tegmental fibres of the oblongata; its development is centripetal, and the fibres abut in the vermis and the nucleus Fastigii.

In addition to these fasciculi which project the general sensory periphery and the auditory end apparatus in the cortex and ganglia of the cerebellum, authors describe a slender bundle from the pneumogastric nerve coursing to the flocculus. The author confirms the existence of a direct cerebellar root for the sensory division of the trigeminus. The main tracts connecting the cerebellum with the higher centres are the præpedunculus and the pontibrachium. There is a third tract whose relations have not been clearly unravelled, but which merits a close study from its presumable relation to visual co-ordination. It connects the cerebellum, and especially its vermis, with the corpora quadrigemina through the valvule of Vieussens. The præpeduncular tract runs from the nucleus dentatus to the nucleus tegmenti, decussating with its fellow-tract of the opposite side. The pontibrachium originates in the lateral edges and the ventral face of the hemispheres, forms the transverse fibres of the pons, and is continued to the cerebrum in the pes pedunculi.

The author now maintains that all the functional relations of the cerebellum are clearly expressed in these anatomical relations, and that a supporting commentary is derivable from comparative anatomy. The vermis cerebelli is the only lobe represented in reptiles, and is also the predominant feature in the brains of marsupial mammals. Here the transverse fibres of the pons are defective; those of the trapezium and the external acciform division, as well as the inner auditory root, are present, and enter it. The vermis is really a cerebellum of a low grade, perfect in itself: it is connected with nerve-tracts of low organiza-

tion, that is, such as are frequently interrupted by ganglionic matter, like the inner detachment of the post-pedunculus. The latter is well developed in lower animals, while the restiform column is absent or rudimentary. With higher development, the general sensory periphery and the auditory apparatus attain a more extensive projection, and this projection grows step by step with the cerebrum itself. Meynert has correctly pointed out the close mutual relationship existing between the dimensions of the cerebral and the cerebellar hemispheres, and the number of anfractuosities of their dentate nuclei. The cerebral hemispheres, the cerebellar hemispheres, the dentated nuclei of the cerebellum and the olivary nuclei, hypertrophy in parallel order as we proceed upward in the scale of mammals.

From this general law there is an interesting deviation which, however, is actually a strong support of the stated conclusions. In the porpoise, with a highly-developed cerebrum and cerebellum, the olivary body is not proportionately well developed. The posterior columns are smaller than in any other mammal. This shows, first, that there is an interdependence between the posterior columns and the olives; and secondly, that it is to be referred to the general atrophy of the cutaneous sensory end organs in these animals. A transitional condition of things is found in the zalophus or sea-lion.

In the case of the porpoise and seal, where, with a diminished cutaneous periphery, we find the olives reduced, while the cerebellum is luxuriantly developed, the part played in the architecture of the cerebellum by the olivary fibres is supplanted by that of an enormous auditory nerve, and possibly by the direct lateral myelo-cerebellar tract.

Rohon's case of microcephaly shows that the olive is a station of centripetal tracts, for it was well developed with a rudimentary cerebrum. In its earliest form, the cerebellum seems to be a species of trigeminal accessory nucleus. The auditory nerve encroaches on this field, and changes the relation in higher forms. This is a significant fact, in view of the close position of the tactile organs of the head, and the otolith sac in some invertebrates, where this sac is basi-antennal.

It is further stated that the crus cerebri must contain those fibres which ultimately, through the posterior part of the internal capsule, convey sensory impressions to the cerebral cortex. These fibres must be derived, and can be derived only, from two sources: from the columns of Goll through the piniform decussation and the stratum intermedium and the transverse fibres of the pons,

which are known to become longitudinal, and eventually join the pyramidal fibres of the crura after an interruption by gray substance (?). Since the restiform column derived from the sensory tracts of the cord is the only tract of lower derivation ending in the cortex of the cerebellar hemispheres and the transverse fibres of the pons, the only tract originating in that same cortical area, we can regard the restiform column, the transverse fibres of the pons, and a part of the pes pedunculi as a connected system of fibres carrying sensory impressions to the cerebrum, and this after a temporary deflection of the current in the cerebellar cortex. Probably a large portion of those fibres of the pes, representing this tract, go to the lenticular nucleus and the frontal lobe, as was surmised by Meynert.

The auditory nerve-root connected with the dentated nucleus, the præpedunculus originating in that nucleus, the ganglion tegmenti into which the præpedunculus enters, and certain fibres passing thence either through a thalamic interruption or the corona radiata directly to the cortex, constitute a parallel system destined to convey impressions originating in the auditory end-organs to the cerebrum, after a similar temporary deflection. Now, it is asked, what can be the object of this deflection? There is a direct tract from the sensory periphery of the body carried through the column of Goll and the stratum intermedium. Why should a luxuriant development of an interrupted by-tract be so prominent a feature of higher development, if interrupted tracts are less perfect, as a rule, than direct ones?

The valvular cerebellum of the reptiles shows no marked relations except to the inner division of the auditory nerve-root. The cerebellum simulates an accessory auditory nucleus, as it were; and as the only spinal fibres entering the reptilian cerebellum are derived from a column corresponding to the internal division of the post-pedunculus, we observe that already in this primitive stage with only the vermis, and that poorly represented, the cerebellum constitutes a meeting point for impressions originating in the auditory and the tactile end-organs. This is carried out as the leading principle of the systematic architecture of that higher cerebellar organ found in man. The hemispheres, with their dentate nuclei, repeat the relations of the vermis and its fastigial nuclei in this, that both auditory and spinal fibres meet there. They are brought into association by fibres radiating from the cerebellar cortex to the dentate nuclei. In other words, the cerebellum is a field where the impressions of touch and position are associated with those of time and space. Its main object

must, therefore, be the fusion of the sensations or their correlation in some way, for the benefit of the cerebral hemispheres. It consequently assumes the position of an informing depot to the great head-centre, the cerebrum. Thus, on strictly anatomical grounds, the older view, abandoned by many as uncertain, contradicted by some experimental physiologists, and by pathological experience, merits renewed consideration, that the cerebellum is not the centre for, but the informing depot of the finer co-ordinations engaged in maintaining the equilibrium. It would be unphilosophical to attempt to study the function of the cerebellum, without bearing in mind the fact that *per se* this organ can do nothing. Whatever molecular oscillations are determined within its ganglionic substances, these must pass to higher centres for translation to skilled motor reaction.

The author anticipates that some may ask why the cerebellum is a special cerebral segment, for all the sensory tracts concerned in its building up might just as well terminate in the cerebral cortex directly? The answer to this is, that the position of the associating ganglion of the auditory and tactile impressions was primarily determined by the position and primitive termination of the auditory nerve-root, and as in the progressive development of nerve-centres, increase in functional capacity is marked by increased apposition of structures to the primitive organ, all associations of a kindred nature became localized there. In this there is some similarity to the cerebrum. Just as the cerebellum may be considered in its higher form as a luxuriant hypertrophy superimposed on the auditory ganglion, so the cerebrum is known to be a supplantation of the olfactory lobe or ganglion.

In conclusion, it is insisted that in excluding this or that function on the strength of negative pathological experience, due attention has not been paid to the fact that, after all, the cerebellum is but a by-tract for impressions conveyed by other channels, and that only the finest co-ordinations of movement with regard to space and time are on anatomical grounds to be connected with the cerebellum. It is confidently asserted that a fine musical ear, the sense of rhythm and of time, and the ability to perform any fine feats of equilibrium are not possible without an intact and well-developed cerebellum.

The following nomenclatural innovations are suggested:

TEGMENTIBRACHIUM (Spitzka). Præpedunculus of Wilder; anterior peduncle or crus, processus e cerebello ad cerebrum, Brachium conjunctivum of older anatomists. — PONTIBRACHIUM (Wilder). Medipedunculus of the same author; middle peduncle

or crus, Brachium pontis of older anatomists.—MYELOBRACHIUM (Spitzka). Postpedunculus of Wilder, equivalent to internal peduncular division plus restiform column of older anatomists.

6. If the remainder of this account of cerebral anatomy equals in thoroughness of detail and in accuracy—we were about to say painful accuracy of detail—the preliminary account lying before us, it will be a solid foundation on which to base a complete, intelligible, and reliable account of the anatomy of the human brain, on some future day. How minute the attention paid by Professor Wilder to what is evidently with him a favorite topic, may be judged from the following lines:

"After spending more than twenty years in the study and teaching of anatomy and physiology, aided by the best models and plates, I feel that nearly all my real and substantial knowledge of the brain has been derived from that of the cat. Nor has the time yet come when I can examine a cat's brain for an hour without correcting some misapprehension, learning something new, or at least gaining some fresh conception respecting the organization or functions of the organ, or its possibilities in the way of variation. The present paper concerns only the *gross anatomy* of the brain, and even that is treated in only a general way. I fully recognize the great, perhaps the paramount importance of a complete account of the *histology* of the organ, if only as a basis for the physiological, pathological, and psychological observations which are constantly making in all parts of the world. But, with all deference to the presumed views of the many and indefatigable workers in this finer field, I hold that the more urgent need is for a provisional, at least, *identification and nomenclature of the visible parts.* I am loth to believe that the authors of some histological contributions are not altogether clear upon the position and relations of the parts concerned; but I apprehend that many readers of such contributions fail to appreciate their excellencies, or to recognize their defects from the lack of an adequate familiarity with the gross anatomy of the brain—a lack which seems almost unavoidable so long as the chief dependence is placed upon the text-books, or upon the appearances presented by human brains in the condition in which they commonly find their way to the dissecting-table.

"Had a recent writer employed the fresh or well-preserved brain of a cat in place of the (presumably) distorted and semi-decomposed human organ, he never could have published a paper 'De la non-existence des trous de Monro;' nor, indeed, does the acceptance of a paper with such a reactionary title indicate that

the editors of *Progrès Médicale*, Nos. 25, 26, have left the beaten track in this respect."

This latter blow, it is almost needless to say, is aimed at Mathias Duval.

Professor Wilder believes that above all other requirements of a clear conception of cerebral anatomy stands a rational nomenclature. An idea of the modifications suggested by him has already been furnished by various scientific and medical periodicals; a further conception may be gathered from the headings of the following queries, some of which we shall attempt to answer, and others of which we leave as problems to those who feel a desire to study the very suggestive paper in the original.

Albicans.—Have the *albicantia* the same relation to the columnæ fornicis which is said to exist in the human brain? What morphical or telical significance has their degree of separation from one another?

The first query is answerable in the affirmative, on the strength of Gudden's plates and our own researches. As to the second query, the only pertinent statement has been made by Meynert, who considers the separation an accompaniment of a higher brain development. The body is stated to consist of symmetrical but fused ganglia.

Area elliptica.—With what does this correspond in man and the lower vertebrates? If it represents the *oliva* or "olivary body," its position is reversed from that in man in relation to the apparent origin of the *N. hypoglossus*.

Transverse sections demonstrate that this elevation corresponds to the olivary nucleus. We presume that the figure reference on the right side of figure 3 (the left side of the organ represented) expresses the author's intention, while the line on the other side is inaccurately prolonged to the pyramid. The exit of the hypoglossal roots, or rather their deeper relation to the olivary nucleus, are not constant in the animal range nor in human individuals.

Area ovalis.—With what does it correspond in man and the lower vertebrates? What are its relations to the several columns of the myelon and metancephalon?

It corresponds to the tubercle of Rolando, and is due to a massing of the gray matter of the substantia gelatinosa, the origin of the ascending trigeminal root.

Crista (*fornicis*).—What are its histological composition, its functions, and its morphical significance? In what other animals does it exist?

We venture to suggest, as a mere surmise, that the crista may be the homologue of a part of the *fascia dentata*, dragged from its parent bed in the great revolution which the origin of the fornix has to undergo in the course of embryonic development. The true cornu-Ammonis structure extends no inconsiderable distance into the apparently free portion of the fornix.

Lyra.—What are its form, extent, connections, and manner of formation? Is it in fact a distinct structure, or only a surface?

The *lyra* of human anatomists is nothing but a surface appearance, the transverse fibrillations on the ventral face of the callosum appearing between the diverging fornices.

Metatela.—The membranous roof of the "fourth ventricle." What are its form, attachments, and histological composition? What are its relations to the *metaplexus?*

It appears to be, in the main, an atrophic tissue containing some medullated nerve-bundles, especially laterally, to which latter Benedict attempted to attach an importance, which has not been sustained.

Myelon and *metencephalon* (medulla). Leaving their histology out of the question, I have not been able to satisfy myself regarding the relations and nomenclature of the visible components of these parts.

The non-homology of the apparent cephalic continuations of the externally visible spinal columns with the latter, will always prove a bar to a nomenclature based on the coarse anatomy.

In describing the excellent plates accompanying the pamphlet, Prof. Wilder takes occasion to state that the trigeminus does not emerge from the pons, but just caudad of the latter. A series of sections from a lion's and another from a cat's brain, incline us to the belief that this statement cannot be sustained, and a glance at the Professor's figure confirms our impression. The ental mass of the hypophysis referred to as visible in the cat, owing to thinness of the ectal layer, is exceedingly prominent in the dog. The mesocœlia, referred to as a true cœlia with lateral extensions in the lower vertebrates, we have found to have large dimensions, without having lateral extensions in the opossum. It is remarked that the *fasciola* does not present the denticulations, which, in man, have given origin to the term *fascia dentata*—many of the lower animals do, however, show these; we have observed them particularly distinct in the hippopotamus. The lithographic figures accompanying this monograph are unusually clear, correct, and thorough as to detail. The fact that most of them are twice the natural size, has enabled the delineator to introduce a num-

ber of those contours, which are in standard works either omitted or rendered with more regard to the picturesque than the anatomically true. It is particularly the contours of the ventricular cavities, the reflexions of membranous investments, and the relation of spaces that are rendered with a distinctness which we have rarely met with in anatomical illustrations of the brain.

We shall return to the subject when the very well-timed and meritorious undertaking of Professor Wilder shall have been completed.

PHYSIOLOGICAL CONTRIBUTIONS.

1. W. **Camerer.** Versuche über den Raumsinn der Haut bei Kindern. Ztschr. f. Biologie, XVII., 1.—2. Sigmund **Exner.** Untersuchungen über die Functionen in der Grosshirnrinde des Menschen. Wien, 1881. (See Review Department.)—3. Oskar **Gartner.** Versuche ueber den Raumsinn der Haut an Blinden. Ztschr. f. Biologie, XVII., 1.—4. Walter **Moxon.** The Influence of the Circulation upon the Nervous System. Croonian Lectures of the Royal College of Surgeons for 1881.—5. **Naunyn** und **Schreiber.** Ueber Gehirndruck mit 7 Curventafeln. Leipzig, 1881. (See Review Department.)—6. Isaac **Ott.** Cilio-Spinal Centres. Journal of Nervous and Mental Diseases, October, 1881.—7. C. **Sachs.** Untersuchungen am Zitteraal, Gymnotus electricus. Nach dessen Tode bearbeitet von Emil Du Bois-Reymond. Mit 2 Abhandlgn. von Gst. Fritsch. Leipzig, 1881: Veit & Co., 8vo, xxviii., 466 pp. With 49 woodcuts and 8 lithographic plates.—8. E. **Schimpf.** Der Raumsinn der unteren Extremität bei Anchylose des Kniegelenks. Ztschr. f. Biologie, XVII., 1.—9. **Spamer.** Ueber den Hypnotismus, seine Ursachen, sein Wesen und die aus beiden sich ergebenden Folgerungen. Jahrb. f. Psych., III., 1 and 2.—10. E. von den **Steinen.** Ueber den natuerlichen Somnambulismus. Heidelberg, 1881, pp. 30.—11. **Yeo** and **Ferrier.** On the Functional Relations of the Motor Roots of the Brachial and Lumbo-Sacral Plexuses. Proceedings of the Royal Society, No. 212.

1. Children having their attention more actively engaged than adults in experiments made with the æsthesiometer, give more reliable and correct results as to the sense of space than adults. This fact is utilized by the writer, and very thorough tables are given; but the main result does not differ appreciably from those

laid down by Vierordt in his "Physiologie des Kindesalters." The interest of these experiments centres in the fact that Vierordt's results were obtained from the same children several years ago, and that a comparison could thus be made, to determine whether a change occurs during growth. Unfortunately the results are not formulated, and the reader is compelled to unravel them out of the tables. It appears that there was an average increase of from two to five per cent in the correctness of space determination within a period of four years; this increase is no doubt attributable, in part, to the frequency of the experiments and the resulting training.

3. Confirms the observation of Czermak that blind subjects have a better tactile perception than normal persons, and that the areas not frequently used, such as the chin and forearm, show a greater increase in acuteness of perception than the areas frequently used, such as the lips and fingers. It was observed that blind persons experience some difficulty in holding their hands still while experiments are being made, owing to the involuntary tendency to touch the experimenter's instruments.

4. The blood-pressure is regulated by a twofold automatic mechanism; the first is the pressure exerted by the cornu of the fourth ventricle; that is, the portion containing its choroid plexus, on the roots of the vagus; the vagus being thus stimulated, the heart's action is diminished, and a too violent entry of blood into the brain is checked. Dr. Moxon claims that pathological evidence sustains this view, as in later life the ventricular cornu and the vagus rootlets are more firmly connected than in earlier life, and most firmly connected in cases of chronic disease accompanied by ventricular distention. Whenever the heart acts tumultuously, the choroid plexus in question, becoming overfull, presses on the vagus, and exerts an inhibition analogous to the ball-tap of a cistern. The second mechanism prevents a too rapid or excessive outflow of blood from sudden changes of posture, it consists in the peculiar arrangement of the veins and sinuses with respect to each other; the longitudinal sinus, for example, receives the cerebral veins in a direction opposite to its own current (!). The velocity of the outflowing current is thus reduced to such an extent that it constitutes a mere current from "overflow."

The greater susceptibility of the lower part of the spinal cord to the disastrous effects of atmospheric pressure, as manifested in the "caisson disease," is ascribed to the fact that the reinforcing afferent vessels nourishing the lower part of the cord, from the

fact that they accompany the nerve-roots, are much longer and slenderer than elsewhere, thus rendering its blood-supply precarious. This is illustrated by the fact that injections of the dead subject often fail to fill these vessels.

8. This, the third of a series of researches on a similar subject, undertaken at Vierordt's suggestion, demonstrated an increase in cutaneous sensibility as to contact, space, pressure, and temperature in an anchylosed as compared with the healthy limb. An explanation is not furnished.

11. Irritation of the first dorsal nerve in the monkey's brachial plexus produces action of the intrinsic muscles of the hand, including those of the thumb and the interossii. Of the eighth cervical, closure of fist, with ulnar flexion at wrist, pronation and retraction of arm, with extension of forearm. Seventh cervical: abduction, with rotation inwards and retraction of upper arm, extension of forearm, and flexion of wrist and fingers, so as to bring the tips against the flank. Sixth cervical: abduction and retraction of upper arm, extension of forearm, pronation and flexion of wrist, the palm of the hand being brought towards pubes. Fifth cervical: movement of the hand towards the mouth, by flexion and supination of forearm, extension of wrist and fingers, and raising of upper arm inwards. Fourth cervical: similar action, with this difference, that the upper arm is raised upwards and backwards. The actions of the lower extremity are respectively: Second sacral: action of the intrinsic muscles of the foot. First sacral: flexion of leg, plantar flexion of foot, flexion of all toes at proximal phalanx, and also of distal phalanx at the great toe. Fifth lumbar: outward rotation of thigh, flexion and inward rotation of leg, plantar flexion of foot, and flexion of the distal phalanges. Fourth lumbar: extension of thigh, extension of leg, and "pointing" of the great toe. Third lumbar: flexion of thigh and extension of the leg.

PATHO-ANATOMICAL CONTRIBUTIONS.

1. **Furstner** und **Zacher.** Ueber eine eigenthümliche Bildungsanomalie des Hirns und Rückenmarks, secundäre Erkrankung beider Organe. Arch. f. Psychiatrie, XII., 2.—2. Hanns **Kundrat.** Die Porencephalie, Graz, 1882. (See Review Department.)—3. Paul **Meyer.** Anatomische Untersuchungen über diphtheritische Lähmung. Virch. Arch., 85, II.—4. Paul

Meyer und Heinrich **Bayer.** Ueber parenchymatose Entzündungen des Centralnervensystems und ihre Beziehungen zum Gliom. Arch. f. Psychiatrie, XII., 2.—**5.** Ladislaus **Pollak.** Congenitale, multiple Herdsclerose des Centralnervensystems; partieller Balkenmangel. Arch. f. Psych. u. Nervenkrh , XII., 1. —**6.** H. D. **Schmidt.** Destructive Lesion of the Left Cerebral Hemisphere with General Pachymeningitis, and a Large Hemorrhagic Cyst Pressing upon the Right Hemisphere, of Thirteen Years' Standing. Journal of Nervous and Mental Diseases, Oct., 1881.—**7.** F. **Schopfhagen.** Das Ependym der Hirnventrikel und die an demselben bemerkbaren Granulationen. Jahrb. f. Psych., III., 1 and 2.—**8.** Julius **Wolff.** Strangförmige Degeneration der Hinterstränge des Rueckenmarks mit gleichzeitigen Meningo-Myelitischen Herden. Arch. f. Psych. u. Nervkrh., XII., 1.

1. About a year ago, Schultze, having his attention called to a case in which congenital anomalies and acquired lesions were combined in the same spinal cord, proposed the question whether a disposition to nervous diseases might not be based on developmental defects, as a starting-point. The authors of the present communication contribute a valuable case to the affirmative side of this question. The patient was left-handed, and the dementia and ideas of grandeur, whose development led to his reception in the hospital, came on after a premonitory period, marked by cephalalgic attacks, disturbances of hearing, and recurrent epistaxis. It is worthy of emphasis that, at this time, the patient was working in a caisson. On reception, he presented the picture of paralytic dementia. After the ordinary apoplectiform attacks, the patient died. The left hemisphere was found to be generally smaller than the right, the asymmetry being most marked in the frontal lobe. This asymmetry was not indicated in the cranium, there being a considerable space filled with fluid between the left hemisphere and the dura. The island of Reil was exposed on the left side, and closed on the right; the gyri were differently developed on the two sides. The authors attribute the rudimentary development of the left hemisphere to a pressure exerted from without during the fœtal period. The great atrophy of the left inferior frontal gyrus, without aphasia, renders this case analogous to the one of Moreau, where the patient was also left-handed, and the speech-field was probably developed in the right hemisphere.

The paretic complication is referred to the laboring under

high atmospheric pressure. In the spinal cord, at the origin of the seventh and eighth dorsal nerve-roots, an irregular development of the gray substance was noted, the right anterior cornu being larger than the left, and containing better cell-groups. As a cause of this asymmetry, it was found that a large nerve-bundle, running in the region of the white commissure, at first running vertically, and then more obliquely, insinuated itself between the central (basilar) gray and the anterior horn. The true fibres of the white commissure were found absent, and the vesicular column of Clark of the left side shared the atrophy of the anterior horn. Lower down in the lumbar region, this relation was found reversed; here an enlargement of abnormal prominence had been noted in the naked eye examination, and a bewildering labyrinth of strange nerve-bundles, irregular ganglionic masses, and distorted outlines complicated the picture of each successive section, until, in the lower lumbar region, *two amalgamated spinal cords* were found, each with its anterior and posterior cornu pairs, and each with the same sclerosis in the posterior and lateral columns. The remarkable feature of this case is, that the spinal canal was normal, and showed no traces of duplication.

Attention is collaterally directed to the fact that the pathological lesions found in the spinal cords of paretics need not be necessarily chronologically related. A sclerosis of the posterior columns of undoubtedly ancient date is often found with a recent myelitis in the lumbar region, and to the latter the fatal termination is often to be attributed.

3. The text for this article is furnished by a case of the writer's, which was carefully observed during life, and examined with equal care microscopically after death; and then follows a discussion in a general way of the subject of diphtheritic paralysis, to which are appended copious bibliographical references. The case is a typical one of diphtheritic paralysis, causing the death of a young, robust man one month after the onset of the causal malady.

The peripheral nervous system presented the evidences of a parenchymatous neuritis. The nerve-fibres were examined while fresh, also after having been treated with osmium, and others after hardening in Müller's fluid.

Among the motor nerves, the phrenic was first examined. It presented the picture of a parenchymatous neuritis. In the same preparation, different stages of degeneration were found near one another, as not infrequently occurs in neuritis following nerve-sections. There were a certain number of fibres which

had suffered damage for a certain length in the medullary sheath, consisting, therefore, of a granular sheath of Schwann and the axis cylinder; they were certainly not fibres of Remak; they did not correspond with the regenerative processes as ordinarily described in the peripheral portion of a severed nerve; and the writer thinks they have a great similarity to what is seen in the central portions of severed or ligatured nerves. There was no perceptible increase or decrease in the number of degenerated fibres in any stated direction. In every preparation there were fibres which had only been affected for short lengths, and the number of these was so great that they suggested the idea of a disseminated process. Frequently swellings of the nerve-sheath were observed. They had the shape of spindles, or balls, or knots; in the latter, the nerve-fibres were pushed apart from one another, or ran fan-like in small bundles, often lying quite eccentrically in the swelling. These swellings were due to circumscribed œdematous or inflammatory conditions of the intra-fascicular connective tissue. In the place of the ordinary elements of this tissue (scanty fibrillar tissue, delicate fibres, usually parallel with the nerves, and holding nuclei and flattened cells), there was now found a newly-formed, swollen, juicy connective tissue with abundant well-developed cells, in which often occur nuclear proliferations, vacuoles, or protoplasmic (fatty granules). Numerous wandering cells, leucocytes, and thick granule-spheres are also found; corresponding to those is generally a marked development of the small vessels in the swellings; but no embolus, thrombus, or disease of the walls was observed in these small vessels. In some cases, these swellings are cylindrical or sausage-shaped. In all these swellings the nerve-fibres are usually markedly degenerated, the degeneration generally extending beyond the swellings a certain distance peripherally and centrally.

The peri-fascicular connective tissue was never found to present anything abnormal.

These swellings are in considerable number on the branches of the phrenic, in the nerves of the abdominal walls, less often in the nerves of the extremities, in the muscular branches of the deltoid, triceps, glutei, adductors, and in small branches to the cervical muscles. A table is given of the relative proportion of swellings and nerves. Larger nerves are lacking in these formations, as well as the smallest branches, although in the latter there is a pathological condition of the connective tissue, as thus: the nerve-sheath presents the appearance of the simple, tube-like,

nucleated, connective-tissue membrane to which Ranvier has given the name of Henle's sheath. Between the nerve-fibres and this sheath, which normally is not closely applied to the former, there are interstices filled with extremely fine, mucus-like, connective-tissue fibrillæ and variously shaped cells. With wandering or lymph cells, and spindle or star-shaped connective-tissue cells, there are found granule spheres and certain peculiar elements which are striking because of their unusual form. They are large, somewhat flat formations, partly studded with vacuoles, partly edged, so that they are bent in different directions, and appear as if furnished with facets. Usually they have two or three nuclei placed close to one another. These are really the flat, tile-like intra-fascicular connective-tissue cells described by Ranvier.

Joined to these connective-tissue alterations, there are found in those finest branches degeneration of nerve-fibres.

The nerves of almost all the muscles of the trunk and the extremities were discovered to be more or less diseased. The cutaneous nerves of the trunk and extremities were also diseased, although in less degree than the muscular nerves; and there were no swellings upon them.

Many cranial nerves were also degenerated.

The anterior and posterior roots of the spinal nerves presented evidences of a parenchymatous neuritis, the spinal ganglia were normal. The only abnormality, either in the white or gray matter of the cord, was that certain cells of the anterior and posterior cornua were slightly altered: they were the large ganglion cells with sharply cut contour, but they had partially or entirely lost their processes. Nuclei and nucleoli were generally unaltered though occasionally their outlines were uncertain or had disappeared. These altered cells were few in number. Nothing abnormal was noticed in the neuroglia of the anterior horns. In the posterior cornua, some small, irregularly shaped ganglion cells were found. Some few cells in nucleus of the hypoglossus had undergone a similar slight alteration; but the degeneration of the hypoglossal nerve-fibres was out of all proportion to these cellular changes.

4. Based on an accurate microscopical study of two cases, the writers claim to have established a connecting link between chronic inflammatory lesions of the nerve-centres and the gliomatous neoplasmata. This has been, as they state in part, anticipated by the designation of Klebs, who styled the glioma of the nerve-centres the analogue of elephantiasis of the skin. The cases

described show that the criteria which Klebs attempted to establish between inflammatory tissues and the glioma are faulty.

5. This is a careful study during life, in the true painstaking, precise German way, of a case which was examined after death in an equally thorough manner. As the subject has only begun of late to be investigated, the paper will well repay perusal. After many interesting statements and arguments, the writer sums up as follows: I. Disseminated sclerosis of the central nervous system can be an intrauterine disease of the fœtus, and manifest itself rapidly in the first few days or weeks after birth, or develop gradually, step by step, several months after.

II. In the author's two cases, there was a departure from the recognized form, in that both presented degeneration of the white substance and the gray ganglionic masses, but also of the cortex with its contained psycho-ideo-locomotor centres of the "motor zones" (Charcot); and that, therefore,

III. The mental operations of the new-born, which are normally simply of reflex nature, are now, in the evident new formation of nervous centres suffering from the fœtal impairment, caused to remain upon a low plane of development, and can only give expression to instinctive animal feeling and organic necessities.

IV. That when the psycho-somatic invalidism or debility, remaining stationary throughout life, is regarded as idiocy, with which view the author does not agree, since Schuele defines idiocy as essentially "a non-attainment of the full development of the senses," it should therefore be studied individually in each case. In this wider sense, the sclerosis appearing in nodules in the central nervous system may be regarded as causative of this variety of dementia.

7. The occasional occurrence of ependymal granulations in maniacal alcoholic, and even in sane subjects is to be explained by the fact, that oft-repeated and chronic hyperæmias are sufficient to produce them at the points for which they seem to have a predilection, such as the porta Monroi and calamus scriptorius. Essentially they are the result of a chronic inflammatory process whose products are of a connective-tissue character. Although occasionally absent in paralytic dementia, yet they are sufficiently constant to be claimed as among the characteristic patho-anatomical features of that disease. The factor determining their greater frequency and intensity at special regions may be due to some mechanical peculiarity in the vascular arrangements. The paper is accompanied by six plates, of which one represents an epithelial granulation from the corpus callosum.

CLINICAL CONTRIBUTIONS TO GENERAL NEUROLOGY.

1. Julius **Althaus.** Beiträge zur Physiologie und Pathologie des Nervus Olfactorius. Arch. f. Psych. u. Nervkrh., XII., 1.—2. Martin **Bernhardt.** Beiträge zur Lehre von der Athetose und den vasomotorischen Neurosen der Extremitäten. Arch. f. Psychiatrie, XII., 2.—3. E. **Bloch.** Neuropathische Diathese und Kniephänomen. Arch. f. Psychiatrie, XII., 2.—4. **Charcot** et **Richer.** Contribution à l'étude de l'hypnotisme chez les hystériques; du phénomène de l'hyperexcitabilité neuromusculaire (suite).—5. C. L. **Dana.** Some Cases that do not Illustrate Reflex Disturbances from Genital Irritation. Med. Record, Nov. 19th, 1881.—6. Dyce **Duckworth.** On Insomnia and other Troubles connected with Sleep in gouty Persons. Brain, July, 1881.—7. David **Ferrier.** The Localization of Muscular Paralyses. Brain, July, 1881.—8. Ernest **Field.** Case of Brain Lesion with Hemiplegia on the Same Side and Unilocular Neuritis on the Opposite Side. Brain, July, 1881.—9. N. **Friedreich.** Neuropathologishe Beobachtungen. I. Paramyoklonus multiplex. II. Ueber coordinirte Erinnerungskrämpfe. Virchow's Arch., 68, iii.—10. J.S. **Jewell.** Spinal Irritation; Journal of Nervous and Mental Dis., Oct., 1881.—11. A. **Joffroy.** Observation pour servir à l'histoire de l'atrophie musculaire. Arch. de Neurologie, No. 6.—12. **Knecht.** Ein ungewöhnlicher Fall von Compressionsmyelitis. Arch. f. Psychiatrie, XII., 2.—13. **Knecht.** Casuistische Beiträge zur Localisation der Gehirnfunctionen. Arch. f. Psychiatrie, XII., 2.—14. S. **Moos.** Ueber Meningitis Cerebrospinalis Epidemica, insbesondere ueber die nach derselben zurückbleibenden combinirten Gehörs- und Gleichgewichtsstörungen. Heidelberg. Carl Winter, 1881; pp. 68.—15. H. **Obersteiner.** A peculiar Sensory Disorder. Brain, July, 1881.—16. L. **Putzel.** Injuries to the Head, Followed by Lesions of the Spinal Cord, Cerebral Symptoms being either very Slight or Entirely Wanting. N. Y. Med. Record, Oct. 29th, 1881.—17. M. **Rosenthal.** Untersuchungen und Beobachtungen ueber Hysterie und Transfert. Arch. f. Psych., XII., 1.—18. M. **Sanger.** Ein durch merkwuerdige Deformitäten ausgezeichneter Fall verbreiterter (neurotischer?) Atrophien von Muskeln, Gelenkapparaten und Knochen. Arch. f. Psychiatrie, XII., 2.—19. Richard **Schulz** und Friedr. **Schultze.** Zur Lehre von der acuten aufsteigenden Paralyse. Arch., f. Psychiatrie, XII., 2.—20. F. **Schultze.** Zur Frage der Heilbarkeit der Tabes. Arch. f. Psych., XII., 1.—21. Nadine

Skwortzoff. De la cécité et de la surdité des mots. Arch. de Neurologie, No. 6.—**22. Spitzka.** Remarkable Automatism in an Epileptic. N. Y. Med. Record, Dec. 31st, 1881.—**23.** Octavius **Sturges.** The Heart Symptoms of Chorea. Brain, July, 1881.—**24.** Francis **Warner.** Visible Muscular Conditions as Expressive of States of the Brain and Nerve Centres. Brain, July, 1881.

1. This is a gently pleasing mélange of curious facts, many of which are familiar. Some, nevertheless, are not generally known, such as: Schiff found that dogs could not recognize their masters when their olfactory nerves had been destroyed. Strychnine and morphine are occasionally useful in anæmia, when applied to the nostrils. Prof. Heim could recognize the acute exanthemata by the odor. In two cases of small-pox, the patient perceived a frightful odor. Skoda was wont to sniff recognition of patients in the last stages of pneumonia, typhus, etc., and gave an unfavorable prognosis when he perceived the "corpse-like" smell. Crompton, of Birmingham, often noticed an earthy odor in different patients a week or two before death, and asserts that he has never been deceived. Begbie, of Edinburgh, distinguished abdominal typhus from the exanthematous form by the "bloody smell" of the latter. Parkes found a peculiar odor in cholera patients. Many women diffuse a marked odor during the menses. Constipated persons, hypochondriacs, and the insane possess a fecal odor. A sharp smell in the lying-in woman betokens a secretion of milk, and an ammoniacal smell is said to precede the outbreak of puerperal fever. Many of these and similar observations were related from the experience of members at a meeting of the American Neurological Association four years ago.

2. The related case of hemiathetosis with hemianopsia, the former developing as a transition from a hemichorea, seems to support the location of the lesions producing athetoid symptoms in the outer thalamic zone, or its neighborhood, near the posterior part of the internal capsule.

3. An excellently registered history of two neuropathic families, whose members exhibited such anomalies as syndactilism, spastic paralysis, epilepsy, incipient tabes, and alcoholism, proves by the fact that in otherwise healthy members of the same families the knee-phenomenon was altogether absent, that this sign by itself cannot be regarded as positively indicating tabes. Another case shows that it may be absent in persons neither tabetic nor neuropathic. A congenital anomaly of some kind must be sup-

posed as explanatory of its absence under other than pathological circumstances.

4. This article is one of a series, some of which have preceded, others of which will follow. It is an elaborate memoir upon the subject. Among other interesting points, the differences and the analogies between localized faradization and mechanical excitation of muscle in hypnotism are thus marked out:

1. In both, the excitation can be limited to a muscle or a group of muscles.

2. In both, the muscle can be excited *directly* by application of the excitant to the muscle itself, or *indirectly*, by application to the nerve.

3. There is a difference in the results—contraction from the faradization, contracture from the mechanical pressure in hypnotism; in the muscles of the face, however, this rule does not hold, and contraction is produced in either procedure.

4. It is easy to localize the electricity to a portion of a muscle, whilst in the hypnotic hyperexcitability, the mechanical excitant induces contraction of the whole muscle when applied to a fasciculus of it.

5. In hypnotism, the movement of a muscle is usually accompanied by movements of synergistic muscles. This does not occur in faradization.

6. In hypnotism there is a special tendinous excitability.

In the muscles of the face, it is asserted that moderate pressure is the most effective. The contraction usually ceases upon the cessation of the pressure, but it will sometimes continue for a short time, never, however, being transformed, in these particular muscles, into the contractions which are observed in the limbs. But, in spite of the continuance of pressure, the muscular action is soon exhausted. Usually one muscle can be excited without rousing its homologue upon the opposite side, but occasionally the pair will be set in motion. It is possible to cause contraction simultaneously of several muscles in such manner as to reproduce what Duchenne de Boulogne termed the *combined contractions of expression and the combined contractions of inexpression.*

It is claimed that the contracture of hypnotism will yield to excitation of the antagonistic muscles; that it persists after waking; that one hand having been contractured by pressure in the usual way, a horse-shoe magnet, placed near the other hand, will, in the course of a few moments, cause the contracture to be transferred to this hand, the first-mentioned extremity becoming relaxed. Still another curious phenomenon is described, which

the authors call "the transfer of latent contracture." It has been shown by MM. Brissaud and Richet that artificial anæmia of a hypnotized limb induced by the application of an Esmarch's bandage deprives the muscles of ability to contract. If this muscle be mechanically excited, no contracture results at the time, but it will, singular to say, after the removal of the bandage. This is known as the latent contracture. Let now, whilst the bandage is in place, a horse-shoe magnet be brought near the opposite limb, and soon a contracture makes its appearance there.

8. A luetic subject, 26 years old, had a slight attack of right hemiplegia; weakness remained in the limbs of that side about three years, and the intellect suffered in the mean time. On examination, there were found slight loss of power in the right arm, dragging of the right leg, no loss of sensation on the right side, but distinct diminution of sensation in the left thigh and in it only, some drooping of the left eyelid, and occasional diplopia. Retention of urine and involuntary passage of fæces occurred from time to time. Anti-luetic medication improved his condition, but lethargy and "general loss of nerve power" remained. The anæsthesia had nearly disappeared, when death occurred. A pigeon-egg sized tumor was found in the operculum of the right hemisphere, with softening of the whole hemisphere around it, only the occipital and frontal extremities being of normal consistence. There was a shirt-button sized yellowish thickening of the endyma of the corpus striatum. Neither thalamus nor corpus striatum were "quite as plump and large as usual" on the left side. The reporter considers this case to bear on the question of the variability of the pyramidal decussation. He regrets that circumstances prevented the removal of the cord, as the increased tendon reflex on the affected side rendered the existence of descending degeneration probable. It does not seem to have occurred to him that a descending degeneration, to merit the name, in such a case, must be as marked in certain cerebral as in the spinal tracts. The case is not a pure one, the appearance of the ganglionic masses of the left hemisphere suggests atrophy from an old lesion, and it is only the optic neuritis and the anæsthesia that can be refered to the right-sided lesion, aside from those symptoms of a more generalized character. If the tumor of the right side had caused the right hemiplegia, the latter should have increased from the collateral softening just preceding death. A notable omission is the failure to record whether the epileptiform convulsions occurring *sub finem* were unilateral or not, and if unilateral, on which side.

9. The first part of this contribution deals with the case of a man, æt. 50, who, in the course of a pulmonary affection, evinced remarkable contractions of the great muscles of the humeral region, the long supinators, and the chief extensors and flexors in the femoral region, which recurred at brief intervals. The contractions involved the muscles as a whole, but generally not to such a degree that the limb was moved; rhythm was absent, and although the symmetrical muscles of both sides were involved, they did not contract isochronously. Sometimes forty to fifty contractions occurred per minute in the same muscle; intervals of fifteen minutes were rare, they being mostly shorter than this. The spasms were most intense and frequent when the patient lay perfectly quiet, reaching their maximum just about the time when the patient was about to drop asleep. During sleep, the spasms ceased, although it occasionally happened that he was awaked by extreme flexion of the thighs against the abdomen, accompanied by pain. Voluntary motion exercised a remarkable influence over the spasms, suppressing them altogether, so that the patient was not disturbed in his occupation as a comb-maker or in walking. Electrical as well as mechanical excitability were normal, but exposure to the air or to a cool draught, as well as other cutaneous irritations, increased the spasms. Of the tendon reflexes, only the patellar was exaggerated. In all other respects, the nervous system was normal. After three months' treatment, which was chiefly directed to the chest trouble, the patient was discharged; the movements disappeared after a few applications of the galvanic current, the patellar and cutaneous reflexes also became normal. Prof. Friedreich, after an elaborate argumentation, concludes that a profound change in the irritability of the nerve-cells of the anterior horn was at the basis of the remarkable symptoms evidenced by the patient. The only assignable cause in this case was fright, heredity was absent. Fright has been recorded as a cause of convulsive symptoms, and even of actual lesion of the cord, as in the bombardment cases of Kohts and the Schreck-myelitis of Leyden. Friedreich, therefore, considers such emotion potent to produce the symptoms related.

Under the name of "Errinnerungskrämpfe," the same author designates certain involuntary repetitions of a previous, either reflexly or voluntarily acquired co-ordinated act, while the general consciousness is maintained. The name is badly chosen, as the use of the prefix memory (Erinnerung) might lead one to believe that psychical phenomena were referred to. The author is doubtless right in saying that the reproduction of a motor co-

ordination, based as it is on the labile state of associated nerve-centres, facilitating their easy reproduction, is analogous to a reproduction of the memory; but an analogy is not an identity. The phenomenon in question is chiefly noticed in children; the first case, curiously enough, bearing the name of Erb, the son of a vagrant musician. This boy, while walking in the woods, believed himself grasped by his cap, and greatly frightened, ran off without turning round till he reached home. Here the parents observed inquietude, jerking movements of the muscles, and grimaces. The urine was voided involuntarily at times, inarticulated sounds were enunciated, the protruded tongue could not be kept steady, and speech seemed changed. While the general picture approximated that of chorea minor, it was noted that all the movements simulated those of a person suffering from great fright. Consciousness was not affected, and the movements ceased during sleep. After six weeks, under purely dietetic treatment, the boy was discharged cured. Other cases of the same character are cited from the author's observations and those of Holst.

11. This is a clinical history of a complicated case of general convulsions, with unconsciousness, at ten years, repeated attacks of coma, followed by partial paralysis, gastric crises, paraplegia, and muscular atrophy.

12. Inasmuch as a direct extension of the inflammatory process, by contiguity, from a diseased vertebra to the membranes of the cord, leading to their suppurative involvement, explained the final disseminated myelitis, it is difficult to indorse the selection of the title "compression-myelitis" by the author of this paper.

14. This is an excellent review of a very interesting clinical question. We learn that of sixty-four cases of recovery from cerebro-spinal meningitis, which showed disturbance of hearing as a sequel, exactly one-half manifested, in addition, a more or less disordered equilibrium. Of the thirty-two cases exhibiting the latter symptom, twenty-nine were totally deaf on both sides, two totally deaf on one, and hard of hearing on the other side, and one case had merely impaired hearing bilaterally. The disturbance of locomotion had existed for periods varying from three weeks to five years after the inception of the disease, and was chiefly characterized by a staggering gait, which in children approximated the waddle of a duck. The remarkable feature was that the disorder disappeared if the patients (usually children) were well supported, and that its intensity was greatest in those children who had not practised walking long before being

attacked by the febrile affection. After an ingenious process of argumentation, the following conclusions are formulated: 1, the centre for the sense of the equilibrium is in the cerebellum; 2, the nerve-end apparatus in the ampullar crista, and, perhaps, of the sacculus, is in combination with this centre by means of nervous channels; 3, disease or irritation of the end-apparatus or of the neighboring structures is competent to produce the same symptoms as disease or irritation of the centre itself: this applies particularly to the symptom of vertigo; 4, unilateral labyrinthine affections, no matter whether they have primarily originated in the labyrinth or have extended thither from the skull-cavity, may manifest themselves by vertigo; 5, should the opposite labyrinth become involved in the same patient, this complication is also inaugurated by a (fresh) vertigo, soon to be followed by staggering gait; 6, sudden unilateral paralysis of the ampullary nerves does not produce vertigo, etc.; 7, the same, as a rule, applies to destruction of the nervous end-apparatus of the vestibular system, following chronic disease-processes; 8, bilateral, acutely produced hemorrhagic or suppurative inflammation of the nerve end-apparatus of the ampullæ, with permanent paralysis, especially when following cerebro-spinal meningitis, causes staggering gait, whose severity is proportionate to the youth of the patient, and which is most intense and of longest duration when visual disturbance coexists. As soon as the muscular and visual senses are sufficiently practised, they vicariate, and the staggering gait disappears.

15. A chemist, aged thirty-five, who had had syphilis, as well as been exposed to extreme cold, began to suffer with the symptoms of slow progressive sclerosis of the posterior columns. After suffering thus eight years, he became melancholic for a year. On recovering from this psychosis, Obersteiner tested his sensibility; the patient showed a good knowledge of the position of his extremities, which were freely movable; heat and cold were readily distinguished, but touch and gentle pressure were not perceived; there was some diminution in the power of localizing and of distinguishing double impressions, and conduction was markedly retarded. In this and in another similar case, there was a peculiar transferral of sensations; the patient would, for example, refer a prick or pressure of one foot to the correct spot, but to the opposite foot. The writer, erroneously believing that this symptom has not been sufficiently noticed before, proposes to designate it "Allochiria," or confusion of sides.

16. After a severe fall from a ship's foremast-head and striking

on the right side of the forehead, a sailor was picked up in an unconscious state, and, after recovery from same, exhibited general and complete paralysis below the neck, speech appearing to be also affected. Sight, hearing, taste, smell, and the facial muscles were unaffected, the bowels and bladder functionated normally. His paralysis gradually improved, and in three months he was able to walk a little; at the end of six months, having continued to improve, he, after a fit of drinking, relapsed, his limbs became weak and stiff; he grew worse in these respects, till now there are cramps in the legs, the body is bent forward in walking, the legs being stiff, and the knees slightly flexed. An attempt to stand on the toes excites clonic contractions of the gastrocnemii, slight *main griffe*, and, in short, a complete picture of spastic palsy. The reporter concludes that a hemorrhage having occurred at the time of the accident in the cervical cord, this lesion was followed by myelitis in the neighborhood, and by subsequent descending degeneration in the lateral columns. Nothing is said as to the degree of involvement of the muscles of respiration at the time of the injury, probably for the reason that the case did not come under the writer's care until some time thereafter.

19. In addition to the ordinary features described for acute ascending paralysis by Landry, diminished electro-contractility and qualitative changes were found in a case which exhibited not only poliomyelitis, but also acute myelitis of the lateral columns on the post mortem. The lesions were pronounced, and the observation is a valuable one, in view of our imperfect knowledge of the pathology of this form of spinal paralysis. A similar case with similar, though less marked lesions in the cord proper, but more pronounced meningitic signs, is described in an appendix by the senior author.

20. This observer had the opportunity of making an autopsy on a patient reported as approximately cured of tabes dorsalis by Erb, in Ziemssen's Cyclopædia. This patient had had latency of all symptoms except the patellar reflex destruction, and occasional enuresis, over twelve years, and died by corrosive poisoning. Characteristic posterior spinal sclerosis was found in the following distribution: lumbar region, diffuse degeneration of moderate intensity of posterior columns; dorsal region, degeneration of most external segment (root-zones) of Burdach's columns, partial degeneration of Goll's columns; cervical region, less intense, but more diffuse degeneration of Burdach's columns, and slight involvement of the columns of Goll; pyelitis and cystitis were the only other noteworthy lesions. In conclusion, the author

polemicizes very properly against the nerve-stretching therapeusis, and suggests as a more legitimate field for the surgical neurotherapeutist—it is difficult to say whether satirically or otherwise—stretching the optic nerve.

21. This is a good resumé of the literature of that phase of aphasia in which the meaning of written words on the one hand, and spoken ones on the other, cannot be appreciated, although there is neither ordinary blindness nor deafness.

23. Claims that the fibrinous bead-like fringes found edging the mitral and occasionally the aortic valve, in most cases of fatal chorea, are rather a result of the chorea than its cause. This assumption is supported by the observation that the murmur develops in the course of the nervous affection. The possibility of the cardiac lesion being the cause of chorea is not positively excluded for those cases arising out of acute rheumatism. The ordinary valvular deposit is considered to be entirely harmless, and disappears in all cases where a considerable period of time elapses between the chorea and death.

CLINICAL PSYCHIATRICAL CONTRIBUTIONS.

1. C. M. **Brosius.** Aus meiner psychiatrischen Wirksamkeit. Wiesbaden, J. F. Bergmann, 1881, pp. 58.—**2.** August **Eickholt.** Beobachtungen ueber atypischen Verlauf und complicirende Herderkrankung der Rinde bei Dementia paralytica. Arch. f. Psychiatrie, XII., 2.—**3.** Rudolf **Gnauck.** Ueber die Entwicklung von Geisteskrankheiten aus Epilepsie. Arch. f. Psychiatrie, XII., 2.—**4.** Ewald **Hecker.** Ueber das Verhältniss zwischen Nerven- und Geisteskrankheiten mit besonderer Rücksicht auf ihre Behandlung in getrennten Anstalten. Kassel, Theodor Fischer, 1881, pp. 34.—**5. Hollaender.** Ueber epileptoide Zustände mit Einschluss des transitorischen Irrseins. Jahrb. f. Psych., III., 1 and 2.—**6.** Wm. W. **Ireland.** The Genealogy of a Neurotic Family. Jour. of Ment. Sc., October, 1881.—**7.** W. B. **Kesteven.** On the Early Phases of Mental Disorder and their Treatment. Jour. of Ment. Sc., Oct., 1881.—**8. Knecht.** Casuistische Mittheilungen. Jahrb. f. Psych., III., 1 and 2.—**9.** Emil **Kraepelin.** Ueber den Einfluss acuter Krankheiten auf die Entstehung von Geisteskrankheiten. Arch. f. Psych., XII., 1. (Serial; will be reviewed when completed.)—**10.** E. **Mendel.** Die Manie, eine Monographie. Wien and Leipzig, 1881. (See Review Department.)—**11.** Wm. Julius **Mickel.** Hallucinations in General

Paralysis of the Insane, especially in Relation to the Localization of Cerebral Functions. Jour. of Mental Sc., Oct., 1881.—**12. Pohl.** Der hallucinatorische Process. Jahr. f. Psych.—**13. Ripping.** Ueber die Beziehungen der Syphilis zu den Geisteskrankheiten mit und ohne Lähmungen. Allg. Ztschr. f. Psych., 37, VI.—**14.** E. C. **Spitzka.** A Historical Case of Sexual Perversion. Chicago Med. Review, Aug. 20th, 1881.—**15. Spitzka.** Progressive Paresis of the Insane, the Participation of the Vaso-Motor System in its Etiology. Chicago Medical Review, Nov. 20th, 1881.—**16.** D. Hack **Tuke.** Presidential Address Delivered at the Annual Meeting of the Medico-Psychological Association, held at University College, London, August 2d, 1881. Journal of Mental Science, Oct., 1881.—**17.** A. P. **Turnbull.** Notes of a Case of General Paralysis at the Age of Twelve. Jour. of Mental Sc., Oct., 1881.—**18.** L. **Wille.** Zur Lehre von den Zwangsvorstellungen. Arch. f. Psych., xii., 1.—**19.** T. B. **Worthington.** A Case of Puerperal Mania, ending in, and apparently cured by an Epileptic Fit. Journ. of Ment. Science, Oct., 1881.

3. It is difficult, after a careful perusal of this essay, to gather the drift of its author's argumentation. It seems to be presumed by him that he is offering a new and important contribution to the question of epileptic insanity, and that it has been left to him to correct certain alleged erroneous conceptions of Samt. A review of the related cases and the commentary justify the belief that, if the relator has made a careful study of Samt's paper, he failed in gathering its gist. For example, in devising terms by which to distinguish the mental disturbances directly dependent on epilepsy, from the complicating psychoses, he gives the following definition of epileptic insanity: "Transitory mental disturbances, generally characterized by numerous hallucinations and delusions, with confusion, and characterized by a peculiar dreamy state of consciousness." A glance at Falret, an author whose absence from the list of quoted authorities is noteworthy, would have demonstrated the imperfectness of this definition, and Samt has related such cases, in which the "transitory" duration of the affection was over twenty days, this, too, quite aside from the question of epileptic dementia. The erroneous conception is held that epileptic dementia was first described as a distinct form of insanity by Bourneville and D'Olier, although even our asylum reports, at least of the scientifically best-managed institutions, have enumerated such a form for the last twenty years and over in their statistics. The first case related presents a remarkable

connection of the delusional periods claimed to constitute an independent insanity, with the convulsions, the delusion that the patient was being violated generally preceded the outbreak of a fit, and was of a character familiar to those who have noted the frequency with which sexual and religious deliria occur in epileptics. The second case is one of atonic stupor, differing in no respect from the ordinary post-epileptic stupor, and related under the remarkable title of "Stupuroese Verrueecktheit." Only the last of the three cases is one of a genüine complication of psychoses, and sustains the proposition of Magnan, that the origin of the complicating psychosis may be quite independent of the epilepsy, although it may be said, in passing, that some of Magnan's own cases do not properly illustrate this position. No reference is made to the intimate relation which may exist between monomania or imbecility, with perversion on the one hand and epilepsy on the other, in cases of asymmetrical or aberrant brain development, nor is there any reference to the "epileptic character." We also note the omission of a discussion of the occasional development of an epileptiform fit as a crisis in ordinary psychoses, terminating their existence—a rare, but well-established occurrence.

The following passage may serve to point out the source of the defect in Dr. Gnauck's conclusions: "The commencement of the 'Verrücktheit' is an interesting feature, and its *modus* seems to have been as follows: In the interval between the convulsive attacks, H. (the patient), is confused, and seems to have anxious conceptions. This state appears to have been determined by sensorial disturbances, and corresponds to an attack of epileptic insanity, which evidently alternated with the convulsive attacks. After the last fit, confusion remained, and this led directly to the stupor-like state, an independent psychosis."

8. Case I., imperative conceptions in an hereditarily predisposed subject, with cranial asymmetry, passing into hallucinatory monomania. The reporter concludes from this case that Westphal was wrong in assigning an absolutely good prognosis to insanity manifesting itself in imperative conceptions and impulses. We should go further and express our surprise that the prognosis could, by any experienced alienist, have been considered even relatively favorable! Case II., "Katatonische Verrücktheit," intercurrent spinal paraplegia with mental lucidity, with the disappearance of the paraplegia, return of the mental disturbance. This history illustrates the vicious influence of Schule's classification. A patient who had frequently committed petty

thefts, and had attacks of petit mal, or some analogous disturbance of consciousness, became the subject of anxious deliria while in jail; in another attack, he had greatly dilated pupils, embraced people, and had unsystematized delusions of grandeur, alternating with lachrymose periods. On the 23d of November he took to his bed, was found to have diminished tactile sensibility in the lower extremities, and extending to the middle of the spinal column ; on the 25th, sensation was diminished in the hands and forearm, motility of all extremities being interfered with, so that the patient could not sit up, and had to be fed. The sphincter vesicæ was paralyzed, patient confused, his face turgid, and the pupils dilated. Electrical examination showed electro-cutaneous sensibility almost or completely extinguished in the anæsthetic areas ; farado-muscular reaction normal. The pulse became small, frequency 50–54; temperature remained normal; no disturbance of co-ordination. On the 2d of December, the spine was found to be very sensitive in the anæsthetic areas, hyperalgesia of the nuchal and trunk-surfaces followed, sensation in the limbs improved, and, on the eleventh, the patient could walk around without staggering; having gotten out of bed suddenly, his vesical continence had returned; with this return of motility and sensation, he became irritable; on the 13th he was depressed, "wanted to die for his country rather than stay in the hospital," and kept running after the attendants. The patient had slight relapses of his motor weakness, took up one delusive conception, which remained constant, that he was the "Prince of Waldenburg." and was aggressive. This all disappeared, and the patient became lucid; he had occasional bursts of excitement, and, six months later, repeated attacks of cephalalgia and vomiting. Peculiar movements occurred in the following spring; the left arm was bent at right angles, the shoulders being drawn up, and the arm was shaking for hours continuously. The hands were often found blue and turgid. In 1880, that is, the following year, mental deterioration had advanced far, the patient was in a sort of cataleptic rigidity ; from this he recovered, with a tendency to a return of the cataleptic phases.

If such states are to be termed "Verrücktheit," that term may soon be used as synonymous with "insanity." If it be borne in mind that the patient's father was an alcoholist and a criminal that the patient had a low type of skull configuration, and right facial paralysis; and these facts be taken in conjunction with the vasomotor disturbance, the pupillary state and the peculiar

character of the moria, so strikingly similar to that described by Samt, it will be recognized that this case was an instance of one of the mixed epileptic psychoses. The recognition of the case as one of "Katatonische Verrücktheit" is the strongest argument that the addendum "Verrücktheit" to the "Katatonia" of Kahlbaum was entirely unwarrantable, and a step backward in psychiatry.

11. In one hundred paretics, Mickle found fifty-five presenting hallucinations and illusions of the special senses, while in forty-five, none could be discovered. In the fifty-five having such disturbances, they involved the sense of vision, forty-one—hearing, forty—touch, twelve—taste, twelve—and smell, eleven times; thirty-two cases had both auditory and visual hallucinations with or without hallucinations of other senses. Auditory hallucinations appear to predominate in soldiers. On the whole, the writer believes that sensorial disturbances play a more important part in paralytic dementia than is generally credited, and that they are not noted, because of their early or transient occurrence. Certain of the hallucinations are neutral, that is, do not affect the emotional states, strange objects are seen, and merely noticed for their strangeness, others are in harmony with the ambitious ideas: emperors, angels, and gold surround the patient; in a third group, corpses and disgusting objects are noted, terrifying the patient; others finally seem to be frightened by vague sights and sounds. The tactile illusions are most frequently of a disgusting character; lumps of fæces adhere to the skin, dirty fluids are thrown on it (in one of our own cases vermin infested the skin), or the integument is tucked in, or spread out to dry in the sunshine. The seat of the hallucinations is located presumably in the cortex, as the thalamus is rarely much diseased in paretics.

13. Ripping attributes to syphilis a much less important part in the etiology of insanity than certain authors who have written on this special theme do. Of 690 patients at Duren, only 22 or .032 had had syphilis; at the private asylum of Endenich, only 27 out of 273 patients had been infected, and in but 14 of these was the syphilis considered to have more than an accidental relation to the insanity. Among those in whom the syphilis caused or provoked the mental disorder, nearly one-half were paretics; but these luetic paretics were only twelve per cent of the entire number of paretics in the tables. Mendel gave a much higher figure, 117 of his 201 paretics having been syphilitic; our experience in pauper asylums yields figures similar to Mendel's, while, in our private practice, the proportion of syphilitic paretics is much

lower, even than Ripping's. He makes the very sound statement that the cases of paralytic dementia with syphilis do not differ sufficiently from the typical disease to justify Fournier's claim that they constitute "pseudo-paralyses," and he fails to confirm Heubner's statement that cerebral lues has specific signs of its own. Although tabes is alleged to be frequently based on syphilis, luetic paresis is not more frequently of the tabetic variety; here our experience is the reverse; the observations of no single alienist can be taken as a gauge in regard to this, as in regard to other questions.

14. The author of this brief article claims that Lord Cornbury, Governor of New York under the reign of Queen Anne, was a typical case of sexual perversion, having feminine tendencies and presenting evidence of moral perversion in addition.

17. The patient had apparently been healthy up to his tenth year, and was considered bright and intelligent at school; he then had an attack of hemiplegia, passing off in about a week, a certain amount of stupidity remaining behind. The boy was able to follow the occupation of a messenger, but, from his twelfth year, mental weakness increased gradually and noticeably; at his eighteenth year, he was admitted to the asylum, his articulation had become impaired two or three years previously, and the patient had been observed to be irritable and impulsive; two "attacks" had also been noted, in which the patient was unusually stupid, and would not take his food till it was put in his mouth; these attacks lasted about a week. He had ultimately become wet and dirty. In the asylum, the motor and mental symptoms increased steadily, the gait became characteristic, the right hand more feeble than the left, his handwriting became a mere scrawl, and, after being confined to bed by paraplegia for nearly two months, he died ten months after admission, the right foot having for some time previous shown signs of commencing gangrene. The autopsy showed atrophy of the parietal and frontal convolutions, leptomeningitis, injection of the cerebral tissues, and endymal granulations. The father, who had lost his sight three years before the youth's admission, was admitted to the asylum three months after his son's death, with fully developed paralytic dementia. The mother had had an epileptiform attack prior to one of her confinements.

18. This is an excellent and thorough article, containing a full bibliography. Sixteen cases are detailed. The author does not believe, with Westphal, that imperative conceptions occur exclusively in those whose intelligence is otherwise unaffected; and

he states that they occur also in emotional and other states. The imperative conceptions lead to an inhibition of the other conceptions, thus inducing, as will any inhibition of the mental mechanisms, a feeling of malaise, pressure, finally dread or fear. The nature of the imperative conception is, according to the author's experience, of two kinds, viz.: either absurd, incoherent, often absolutely silly, or quite natural, intelligible, and simply erroneous. It is maintained that imperative conceptions seldom occur without imperative acts; but the insane with imperative or impulsive acts, have periods when they suffer with the imperative conceptions alone. The latter are not stationary symptoms, but may develop into graver ones that denote far more extended pathological alterations; and the form described by Dr. Hammond, under the name of mysophobia, has been known to thus develop. Of Prof. Wille's sixteen cases, nine were in females, seven in males. Westphal also observed no material difference between the sexes. Griesinger had mostly males, but Schüle, Delasiauve, and Legrande du Saulle had mostly female cases. The age was as follows:

Between 14–20 = 4.
" 21–25 = 1.
" 26–30 = 5.
" 31–35 = 2.
" 36–40 = 4.

The patients belonged to the middle and lower classes. Three of each sex were of slight intelligence, the others really intelligent, only two females being of high order of intelligence and education. As predisposing causes, there were in four, nervous and hypochrondriacal conditions; in four, melancholy and foreboding temperament; in two, originally slight mental weakness; in three, morbid orderliness and cleanliness. In only three (one male, two female) was there nothing abnormal previously. Of eight of the females, six presented more or less marked symptoms of hysteria. In six (three of either sex), heredity was denied, but four of these had, in early childhood, displayed a melancholy, uncertain, irresolute nature. Four of the males were onanists, but three of the four had been eccentric before commencing onanism. Only one of the females was an onanist, this fact, in her case, too, being of dubious etiological import. The development is a gradual one in many cases, reaching back to childhood. The course is paroxysmal, partly intermittent, partly remittent. The author has seen no recoveries, as have others. The prognosis is doubtful or unfavorable. Although this form of insanity cer-

tainly passes into the melancholia, which occurs in chronic mania, the author does not regard one as a stage of the other, but as distinct mental entities. In most cases, heredity is present as a predisposing cause; also congenital or early developed neuropathi or psychopathic predisposition. The disease has close relations to the neuroses, especially to hypochondria and hysteria. Asylum treatment is deemed the best, except with such patients as have sufficient means to be well treated at home. The treatment in all cases was with tonics, ferruginous preparations, warm evening baths of one to two hours' duration, and has been proven beneficial. Narcotics were employed for the excited conditions, the bromide of potassium being found of little use. Twice was a sojourn at the baths of St. Moritz of considerable use.

THERAPEUTICAL CONTRIBUTIONS.

1. S. V. **Clevenger.** Medical Electricity. Chicago Med. Journal and Examiner, Nov., 1881.—**2. Flamm.** Studien über Irrencolonien. Jahrb. f. Psych., III., 1 and 2.—**3.** L. **Lowenfeld.** Experimentelle und kritische Untersuchungen zur Electrotherapie des Gehirnes. München, Jos. A. Finsterlin, 1881, pp. 146.—**4.** F. **Schopfhagen.** Eine Methode der zwangsweisen Fütterung. Jahrb. f. Psych., III., 1 and 2. **5.** H. **Tillmanns.** Ueber Nervenverletzungen und Nervennaht. Archiv f. klin. Chirurgie, 27, Bd. 1.—**6.** A. de **Watteville.** An Electrotherapeutical Superstition: "The Galvanization of the Sympathetic." Brain, July, 1881.

1. It appears that protests against electro-therapeutical aberrations are the order of the day. Almost simultaneously with De Watteville's eloquent exposure of the fallacy of the so-called galvanization of the sympathetic, the writer before us issues a pronunciamento against the general abuse of electrical appliances, and particularly against the extravagant claims of the scientific and pseudo-scientific advocates of static electricity. The paper is intensely polemical, but it is difficult to see how, if things are to be called by their right names, it could be less so. The following, in part an almost self-evident assertion, and in part showing some tendency of its author to approach an extreme opposed to the one he is attacking, may illustrate the tone of his communication:

"Take the bulk of the respectable literature on this subject, and after excluding the ordinary descriptions of apparatus and

their modes of action, it is astonishing how very little there is of a practical nature in electrical treatment of disease; yet we have electric baths and other elaborate apparatus, inviting the afflicted to take a shock at from five cents on the street corner, to five dollars in some gorgeously furnished apartments. The simple little pocket battery will, in the hands of a regularly educated physician, prove infinitely more valuable in ailment treating than the most costly and imposing array of electrical apparatus, managed by an advertising ignoramus. Medical electricity does not yet deserve enough confidence in its curative properties to warrant any one becoming a specialist in that field, nor does the possession of a fine set of electrical apparatus insure brains or education to its owner, any more than the ownership of an amputating set creates a surgeon.

. "I would not have it understood that I disparage the use of electricity as a curative agent, in proper hands; but owing to the medical applications being few, and depending for their efficacy upon an intimate acquaintance with disease, it stands to reason that a very ordinary instrument, in the charge of an intelligent and regularly educated physician, will be of some service, where costly apparatus, under other circumstances, may easily prove hurtful.

"There is a disposition on the part of certain medical men to resort to innumerable tricks to increase their incomes, nor do we find this class peculiar to any one so-called school. Show, pretence, glitter, owlishness, pass current too often for knowledge and skill. Seeing this, otherwise excellent physicians are tempted to resort to the same charlatanry, excusing it on the ground of having to use psychological influences on their patient's behalf. They find their clients impressed by glittering machinery, and as the imagination undoubtedly has an influence over bodily conditions, why is it not justifiable to resort to measures so harmless, that good may result? Such Jesuitical reasoning is worthy of the highway robber. It is but another step to sugar-pill placebos, and trickery of the vilest sort, all in assumed interest of the patient."

As regards statical electricity and the statical interruptor in relation to the question of induction, Clevenger maintains that the burden of proof rest undiminished by recent writings and discussions on the shoulders of Vigouroux and Morton.

3. Lowenfeld insists on the importance of taking into account the difference existing between the effects of currents applied to the head passing in different directions. Reviewing the well-

studied observations of Hitzig as to the various forms of vertigo induced by tranverse currents, he concludes that, where it is intended to galvanize the brain as a whole, currents running in the sagittal direction should be employed. That here the polar difference should be taken into account is another point on which he lays stress, and he proceeds to illustrate the actual existence of such a difference by the experience of Althaus, whose hemiplegic patient felt subjectively as if he could fly, under a descending current, but complained of fulness and heaviness under an ascending one. Lowenfeld does not employ the current for longer sessions than two minutes, as the initial contraction of the blood-vessels, which he was able to demonstrate experimentally in animals, might then be followed by the opposite condition. He therefore cautions the electrician against following the advice of Legros and Onimus, who recommend sessions of from three to six minutes' duration.

5. This article is really a book. It runs for one hundred and two pages, and is an epitome of the literature of the subject. Any one desiring information on nerve injuries and nerve sutures may turn to this with perfect confidence that what is not herein contained is insignificant or has not been made public. It is impossible to do justice to it in an abstract. We can only select those facts which are *new*, recommending to the surgeon and neurologist the careful perusal of the resumé of numerous facts which are of scientific interest, although they may be familiar to many versed in nervous physiology and pathology.

Nélaton is said to have been the first to suture a nerve, doing it April 24th, 1863.

Among the symptoms of nerve injuries, the following are dwelt upon especially: Marked feelings of coldness; Hutchison has seen a decrease of $2\frac{1}{2}$–5° C., Kraussold 6–7° C., Roden even 9.8° C. These differences, according to Hutchison, remain relatively the same whatever the temperature be to which the body is exposed. Increase of temperature has also been observed, in one case being 2–5° C. Occasionally, burning, prickling, formicating feelings; sweating; atrophy of different tissues; herpes, pemphigus-like eczema, ecthyma; are symptoms which have been frequently written about. Less known is it that ulcerations, gangrene, perforating ulcer, periostitis tending to necrosis, even infrequently caries, chronic hydrarthrosis, chronic adhesive synovitis, may result from nerve injuries.

The prognosis of traumatic paralysis of mixed nerves, as formulated by Baerwinkel, is approved:

1. When, a few months after the injury, the peripheral sense of pressure is restored, there has been no separation of nerve-fibres only more or less of crushing of them, and the sensory filaments are capable of conduction, and recovery from the sensory paralysis is almost certain, *probably* also from the motor palsy.

2. When the sense of pressure is absent, it need not necessarily be inferred that there is solution of continuity in the nerve, although this is almost certain when there are other symptoms of irritation, as spontaneous pains or those evoked by pressure above the wounded spot and radiating to the periphery.

The author dwells at some little length upon the slighter nerve injuries which have so often been caused by venesections. Several curious cases are narrated of luxation of the ulnar nerve from its groove upon the internal condyle.

Nerve-sutures are of two kinds, viz., direct, and indirect. The former involve the nerve itself, the latter are involved through the sheath, or this and surrounding tissues. A table is given of thirty-five cases of direct suture and of seven indirect. These tables contain the operator's name, age and sex of patient, the name of nerve, kind of injury, time and method of suture, the result.

In the thirty-five cases of direct suture, there was an undoubted success in eight, ten were probably successful, in the remainder there was either a doubtful result or positive failure. The author endeavors to answer the question as to how long after the suture the sensory and motor disturbances began to improve, and as to when the paralytic symptoms had more or less disappeared, by an analysis of cases. In Nelaton's case, the movements of hand and fingers were perfect at end of one year. In another, the hand was used eight to nine months after the operation. In a case of Simon's, where the suturing was done ten months after the injury, the motility and sensation were nearly perfect one and a half year afterward. Esmarch's case, operated on sixteen months after the injury, displayed decided improvement of motion and sensation five months after. Langenbeck, operating eighty-one days after injury, saw "rapid and decided improvement," beginning with better muscularity, on the twenty-fifth day. After suture by Thiersch of the ulnar and median nerves, the patient was able to resume his work as a mechanic. Sensibility, in accordance with long-ascertained facts, is re-established long before motility, and in explanation the writer speaks of the experiments of Arloing and Tripier and others, on recurrent sensibility. The eighth, third, fourth, seventh days were those on which the restoration of sensation began in the several cases. Nevertheless, there are

cases where motion has preceded sensation in the regenerative process. Motion commenced to manifest itself on the fourth, nineteenth days in several cases, in several others about the third week.

In the eight cases of undoubted success from nerve-suturing, the nerves injured were: Median, four times; ulnar, four times; radial, twice; internal cutaneous, once. In one of these cases, three nerves were sutured, the median, ulnar, internal cutaneous; in another, two, median and ulnar. Union by first intention was obtained three times, in the others moderate suppuration, except in the case of the threefold suture where suppuration was excessive, not preventing, however, a good result. The suturing material used was: Twice silver-wire (Nelaton, Notta), carbolized silk once (Jessop), once silk and catgut together (Simon), catgut four times (Esmarch, von Langenbeck, Thiersch, Tillmanns). In regard to the time of operation after injury, four times it was done in the first hour, once ten to twelve hours after, once forty hours after; the longest period that has elapsed has been sixteen months, as before stated. Jessop operated on a patient who nine years before had been wounded in the ulnar by glass, a neuroma was extirpated, nerve sutured; and the motor and sensory symptoms, which had persisted for nine years, disappeared.

In a case of Langier's, it is stated that the sensation was restored on the day following the operation.

The writer ascribes the failures to lack of antisepsis in the operation and after-treatment.

No ill consequences, especially not tetanus, have resulted in any case from direct nerve-suture.

Of the seven cases of indirect, or peri- (para-) neurotic nerve-suture, six were successful, the seventh dying on the eighth day after operation from hemorrhage from axillary artery. One case was operated on eight months after the injury, the other five immediately or a few hours after. Union either by first intention or with slight suppuration. In these cases, motility returned with surprising rapidity. The indirect, therefore, have been much more successful than the direct sutures, but it is not manifest as to whether this was due to the method of operation, or to the early date of operation after injury.

In summing up, Dr. Tillmanns expresses these conclusions: Of forty-two cases of nerve-suture, twenty-four were more or less successful. In these twenty-four cases, however, there were many in which the normal condition was not regained, and even in the most successful cases there was not an absolute return to

integrity of nerve. In eleven cases only was the evidence conclusive as to permanent success. In two cases, success, but no details. In seven cases, *probably* partial success. In two cases, temporary success. In one successful case, nerve not thoroughly severed. In the remaining cases, result doubtful or nil.

The article concludes with a long review of the physiological, anatomical, and histological aspects of the question of nerve-regeneration.

6. "Under the title of 'Galvanization of the Sympathetic,' has been, and is being, accumulated a large amount of that kind of literature which has done so much to cast discredit on the subject of electro-therapeutics. Erroneous physics, imaginary physiology, fantastic pathology are there worked by processes unknown to ordinary logic into a sort of mystical creed." A sound word at the right time!

MEDICO-LEGAL AND ANTHROPOLOGICAL CONTRIBUTIONS.

1. J. A. **Campbell.** Complaints of Insane Patients. Journal of Mental Science, Oct., 1881.—**2.** J. D. **Crothers.** The Trance State in Inebriety; its Medico-Legal Relations. Med. Record, November 19th, 1881. (See Society Transactions.)—**3.** Hermann **Friedberg.** Gerichtsärztliche Praxis. Vierzig gerichtsärztliche Gutachten. Mit einem Anhang: Ueber die Verletzung der Kopfschlagader bei Erhängten und Erdrosselten und über ein neues Zeichen des Erwürgungsversuches. Wien, 1881. Urban & Schwarzenberg. 8vo, xii., 452 pp.—**4.** Carl **Froelich.** Einige Bemerkungen über die geisteskranken Invaliden des Krieges 1870 bis 1871. Arch. f. Psychiatrie, XII., 2.—**5.** P. **Heger** et J. **Dallemagne.** Etudes sur les caractères craniologiques d'une série d'assasins exécutés en Belgique. Bruxelles, 1881. 8vo, 64 pp., with five plates.—**6.** J. G. **Kiernan.** The Case of Guiteau. Chicago Med. Review, December 5th, 1881.—**7. Knecht.** Die Irrenstation bei der Strafanstalt Waldheim. Allg. Ztschr. f. Psych., 37, II.—**8.** A. N. **Merrick** und C. O. **Bishop.** Brief for Appellant *in re* State of Missouri *versus* Thaddeus Raber, Appellant. Charge: Murder in the First Degree; Defence: Insanity.—**9.** Henry **Morselli.** Suicide: An Essay on Comparative Moral Statistics. International Scientific Series. New York, 1882. (See Review Department of next issue.)—**10.** David **Nicholson.** Some Observations on the State of Society, Past and Present, in Relation to Criminal

Psychology. Journ. of Ment. Sci., Oct., 1881.—**11.** Alex. **Robinson.** Case of Feigned Insanity. Journ. of Ment. Sc., Oct., 1881.—**12. Seeligmuller.** Ueber traumatischen Tremor und die Simulation desselben. Jahrb. f. Psych., III., 1 und 2.

1. Recalls attention to the ease with which, on the slightest provocation, such as holding a patient's hands to prevent self-mutilation, black and blue marks may appear in the insane, and confirms the observation of Blandford and others, that cutaneous discolorations in the insane resembling bruises may occur spontaneously. He insists that, while most of the complaints of patients are unfounded, being due to morbid antipathies to officials, or the result of general ill-feeling and of delusions, or of insane love of notoriety, hysteria, and confused states connected with epilepsy, that they may be and sometimes are truthful, and should be investigated. He believes that certain patients are fit to give evidence under oath, and that such testimony is of value when corroborative of the testimony of sane persons.

4. The writer protests against a too liberal construction of the pension laws, as applying to insane invalids, and cites a case of Schwaab against the latter's claim to enforce such construction. It is the case of a soldier who became insane after an ill-defined exanthematous fever, the existence of which, in the regiment, was not proven, and which attacked the patient after the end of the campaign.

6. In view of the national interest, and the importance of the the medico-legal issues involved in this case, we present a portion of this brief article, the first scientific description we have met of the case, in the author's language:

"The assassin's family history gives decided evidence of hereditary taint. Two uncles died insane, as also two cousins of the first degree. The father of the assassin was peculiar, and displayed abnormal religious views, and to all appearances was only saved from an insane asylum by passing into regular business routine under the control of others, for, from all accounts, it was impossible for him to carry on business by himself. The mother of the prisoner had, during her pregnancy with him, meningitis, from which she never entirely recovered. The two children born to this mother subsequently to the prisoner were both deformed. One had a cranial, the other a cardiac malformation. The prisoner had a marked deficiency in speech in his early life, which it took a long while to correct. The sister of the prisoner has attacks of petit mal, and the brother is said to have suffered

from some convulsive disorder during childhood. A daughter of the sister just mentioned, aged eight, has some obscure convulsive disorder. The prisoner, during his early childhood, and up to about the time of puberty, displayed no peculiarities other than being very reserved, though not taciturn. After puberty, he attempted to obtain an education, but, worked on by the peculiar views of the father, entered the Oneida community, where he was distinguished by his intense egotism and comparative stupidity. He has at several times claimed inspiration for his acts, and is apt to regard any imperative conception as a revelation from Deity. Moral sense, in the true meaning of that term, he has none. His face is markedly asymmetrical, the asymmetry extending to his pupils. His claim of being insane is a quasi-legal plea that, as he was inspired by the Deity to remove the President, his free agency was destroyed, and a man without a free will is, according to him, in the legal sense, insane. This feigning of insanity is not seldom found among the insane. Laehr (*Arch. für Psychiatrie*, Bd. I.) narrates a case in which there was marked hereditary taint, who committed a crime against morals, shammed a form of insanity which he had not, and his real insanity came out after the sham was exposed. Dr. Nichols, at the conference of experts on this case, narrated a case in which a patient committed murder under, as he believed, the command of the Virgin, but, having two young lawyers assigned as his counsel, they advised him to feign insanity, which he did, in the form of dementia. The experts detected both the sham and the real insanity, and had him sent to an asylum, where his insanity developed itself. Similar cases are cited by Delasiauve, Ingels, and Stark, and by Hughes and Pelman.

"Probably one of the strongest arguments that could be advanced to demonstrate the fact that Guiteau is an unquestionable lunatic, consists in the great similarity, nay almost identity, of his case with certain cases narrated in the literature. Beer describes a number of such instances where individuals of either a narrow mind or with a morbidly exaggerated opinion of self, became depressed in consequence of failure in a law suit, and developed delusions of persecution; others became seized with a perfect furor for litigation, and according as the patient was a literary man, lawyer, scientist, soldier, or official, he became engaged in journalistic, legal, or polemical conflicts, engaged in duels, or sank to the level of a sycophant. Scholz cites the case of a man still more resembling Guiteau, who was a vain egotistical individual, disappointed in seeking office, and in consequence insulted higher

officials and even the ruler of the country, thus involving him in the coils of the criminal law. Krafft-Ebing describes a woman who, after being defeated in a law suit, entered into on a delusional basis, studied law, and became a perfect expert at the code. Defeated in successive trials at higher courts, she threatened to go to the emperor, and being recognized as insane, developed considerable sarcastic ability in ridiculing the idea of her being a lunatic. He also cites another case of a railroad engineer who, after a dispute about a contract, in which the right was not altogether on the other side, and having signed a compromise by which he agreed to drop all claims against the company, began a series of ridiculous suits, insulted the attorneys, libelled the courts, refused to pay his taxes, and being finally arrested, was arraigned in a court, where he delivered a thundering philippic, threatened to revolutionize the land, and being noticed to make suspicious movements in the direction of his pockets, was examined, and found to have a loaded revolver. He was committed to an asylum and there acted the part of martyr. Sander, in his excellent paper on Verrücktheit, refers to the fantastic tendencies, at first obscure to their bearer, which lead to his non-appreciation of society, to brooding, and to the final erection of delusions based on self-conceited notions. He claims it is difficult to elucidate these delusions. The case of David Wemyss Jobson, who was under my observation for many years, is in point. Prior to the inception of paralytic dementia, this patient involved himself in quarrels with the English courts, was fined and imprisoned. After he came to America he was a journalist and an office-seeker, 'ran' for the office of comptroller, and obtained a few votes. He pestered the judges of the various courts so persistently that he became quite a well-known personage. Finally his insanity was recognized, and he was sent to an asylum.

"One of the most striking and notable features of Guiteau's mental state is his marked moral perversion. That this perversion is a pathological one, as dependent on a cerebral defect as his other abnormal mental manifestation, must be evident to every reflecting psychologist. It is of this form of mental alienation that Krafft-Ebing says that the evident symptoms are a moral insensibility, an absence of all moral judgments and ethical conceptions, their place being supplied by purely logically based judgments of a utilitarian character. He adds that the moral rules of the community may be learned in a parrot-like way, but they always remain unassimilated conceptions and fail to act as a guide to the moral lunatic's actions. It is to be remembered here

that the case of Guiteau, like others I have observed, strongly proves the incorrectness of Prichard's idea that with this form sensorial perversions are absent. Krafft-Ebing, evidently without having reflected much, indorses this opinion. His own cases contradict this. From the cases cited, the reader can draw his own conclusions. It, will, however, be obvious that Guiteau's type of insanity is not exceptional, but is well paralleled in literature."

It does not appear to us that the author was very fortunate in speaking of the assassin's insanity plea as a feint of insanity. He has given the true explanation where he pronounces it a legal "dodge." Otherwise the paper is as concise and thorough a one as it is brief.

7. Dr. Knecht furnishes an interesting set of statistics, exhibiting the percentage of criminals who were insane at the time of their conviction, or became so later during their sojourn in prison. The first table is calculated to show the difference in the frequency of special forms of insanity in the non-criminal and in the criminal portion of the community.

FORM OF INSANITY.	PERCENTAGE OF ORDINARY ASYLUM POPULATION.	PERCENTAGE OF THE CRIMINAL INSANE IN THE INSANE WARDS OF WALDHEIM JAIL.
Melancholia	8.5	22.5
Mania	10.5	6.6
Secondary forms	42.6	42.2
Paralytic forms	9.7	6 5
Epileptic forms	8.1	13.1
Idiocy and imbecility	14.6	10 1

This table illustrates the well-known influence of isolation in the production of melancholia. It also illustrates the close relation existing between the epileptic character and criminalty, a relation which finds an expression in the frequent presence of similar cranial anomalies in epileptics and criminals.

A second table is still more valuable as showing the relation between special forms of crime and insanity.

NAME OF CRIME.	NUMBER OF TOTAL PRISON RECEPTIONS.	NUMBER AND PERCENTAGE TRANSFERRED TO INSANE WARDS.
Murder or attempt to murder...	74	13 (17.6)
Homicide and violence to person	51	5 (9.8)
Robbery	64	8 (12.5)
Arson.....	219	15 (6.8)
Rape..	52	3 (5.8)
Seduction of Children.....	299	17 (5.7)
Perjury	220	6 (2.7)
Military offences.....	23	5 (21.7)
Crimes against property.....	5,116	95 (1.9)
Other crimes.....	158	1 (0.6)
	6,278	168 (2.7)

It is noteworthy that of one hundred murderers, seventeen were either insane at the time of the conviction, as was the case with three of Knecht's thirteen cases, or become so afterwards; in part this may be explained by the longer term of imprisonment to which murderers are condemned; but, in the main, alienists will conclude that the high percentage is a proof that this phase of crime is more frequently the expression of insane tendencies than some others. Of the twenty-three military offenders, the same may be claimed. The single bigamist was, as might have been expected, a paretic. The fifteen who committed arson included six who were already insane at the time of the deed. This was the case with seven of the seventeen guilty of seduction of children.

The general conclusion to be drawn from these tables is that the transfer of a criminal to a criminal lunatic asylum is not necessarily a proof that his criminal deed was the outcome of insanity, as many sane criminals become insane from confinement and accidental causes.

11. Edward Devine and some friends, finding a drunken man prostrate in the street, were about to assist him on his feet, when Thomas Dolan, brother-in-law of the drunken man, came out of an entry, and with an oath asked what they were doing. Devine answered civilly, and thereupon Dolan aided them to take his

relative home, Devine no longer assisting. After conveying him home, Dolan returned with an open knife in his hand, and without any provocation stabbed Devine in the abdomen; the wound proved fatal in forty-eight hours. The murderer immediately made his escape, and was not found for four days, being apprehended near the scene of the crime, though it was proven he had been out of the city some ten to twelve miles in the mean time. His own declaration was as follows: "My name is Thomas Dolan. I am a native of Ireland, and reside at Middleton Place, Garngad Road, Glasgow. I sometimes am known by the name of D'Arcy. My step-father gives me that name. I did not know Edward Devine, iron-dresser, and I was not aware that he was in a close at Middleton Place on Saturday night, the 31st of July last. That night I was going out from my own house, 13, Middleton Place, for a glass of beer, and I saw a lot of people standing in the close, 21, Middleton Place. It is a dark close, and the people I refer to were standing in the dark portion. Some of them asked me if I was going to stand them a glass of beer, and I said I hadn't it on me, except what I was going to get for myself. When I told them this, some of the men in the close knocked me down, and began to kick and batter me; and they called me out of my name, and said they would have the beer out of me, if they could not get it to drink—that they would give me a beating for not getting the beer. I tried to protect myself as well as I could, but whether I had a knife in my possession, and used it, I cannot say. I do not remember having a knife at all that night. I do not remember that there was a good brother of mine in the close that night. I did not see a drunken man in the close that night, and I did not see anybody going forward as if to lift a drunken man. I saw nobody in the close except those people I have referred to as having assaulted me. There was a lot of people who attacked me, but I cannot say who they were, because the close was dark. Besides, they knocked me so stupid that I could not say who was about me. I was about half drunk that night. I had three or four glasses of whiskey, besides ale or porter. All which I declare to be the truth. I cannot write."

Two or three days after his apprehension and the above declaration, prisoner acted wildly; and though it was at first the impression in jail that the man was shamming, the feigning—if it was such—persisted so long that Dr. Robertson was called in to examine him, and decide the question. When he made his visit, he found that from the governor of the jail down, every official regarded him as insane. Prisoner had begun by walking up and

down in his cell, rolling his eyes, swearing, throwing utensils at other prisoners, making sudden and dangerous attacks on them, and becoming filthy. He had to be restrained in strong leather muffs. After ten days, he became quieter, but periods of comparative calm alternated with *apparent* paroxysms of maniacal excitement. There had been no delusion or any evidence thereof, beyond his declaration that he saw men at the window. He had made two supposed attempts at suicide, and frequently threatened to destroy himself. The medical man of the prison had placed a bottle marked poison, full of colored water in his cell, and had spoken in his hearing of its dangerous qualities. *The prisoner drank half the contents.* There was no somatic disturbance, but owing to his being troublesome at night, he had to have chloral for several nights; without medicine he had lately slept seven to eight hours, though sometimes noisy for a short time during the course of his sleep. Dr. Robertson's reasons for considering the insanity feigned, with which Dr. Yellowlees coincided, were, first, that in the middle of apparent furious excitement, the prisoner would stop to answer such questions as whether he had received a blow on his head, and that he gave a coherent account of the medical interview to a fellow-prisoner; second, that no somatic signs of maniacal excitement were present, and third, that he made furtive glances at the examining physicians. Subsequently, the prisoner confessed that another inmate of the jail had "put him up to" shamming. Dolan had a small head, was evidently a person of low intellect, but of a certain degree of cunning, and his crime was the outcome of alcohol. He was sentenced to fifteen years penal servitude.

12. The writer refers to the observations of tremor either in individual limbs, or groups of muscles, or presenting themselves under the mask of a paralysis agitans, following injuries, cited by Meschede, Handfield Jones, Andral, Russel, and Charcot. His own experience seems to justify his claim that the tremor first appears near the injured periphery before extending or becoming general. He observed that in consequence of the legal obligation under which the heads of manufacturing establishments are placed in Germany, to support or to indemnify their injured workmen, and the fact that it is not as difficult as might be supposed to simulate tremor, that this symptom might be feigned with mercenary objects. A railroad employee, who claimed to have been injured by concussion, feigned this symptom for months. A differential sign between real and feigned tremor, is that in the latter the malingerer is unable to keep up the tremor

if placed on his abdomen, and his leg is flexed on the thigh at right angles. Seeligmuller refers, in conclusion, to Benedict's soldier who, after keeping up a feigned tremor for a long period, was unable to suppress it, long after having admitted malingering.

APPENDIX: REPORT ON CONTRIBUTIONS TO CLINICAL PSYCHIATRY BY AMERICAN WRITERS.

In this retrospect, it is proposed to discuss all of interest occurring in the domain of American Psychiatry. To this end, not only the original articles appearing in the various journals, but also the reviews and comments expressing the opinions of American psychiatrists, have been laid under contribution. Naturally, much that has been recently written relating to insanity has been so written with special reference to the Nation's great medico-legal case, the Guiteau trial. The extensive literature which promises to centre around this *cas célèbre* is as yet quite immature, and has been rather one-sided. Thus far, the few scientific original articles and critiques published sustain the view that Guiteau is unquestionably insane; and as those representing or claiming to represent the views of these experts who either testified that Guiteau was sane and feigning insanity, or that he was sane and not feigning insanity, have been silent as far as any scientific discussion of the case is concerned, and the expressions of opinion on their part have been mainly in the direction of personal attacks on the experts who had the temerity to appear for the defence, and these attacks are published under the cover of editorial slurs in the secular, and, we regret to add, a portion of the medical press, we shall defer the consideration of this branch of the subject until such time as a responsible representative of the experts appearing for the prosecution shall raise his voice in an appropriate medium of scientific discussion.

An article, remarkable more for its peculiar title than for anything novel in the body of the paper, is contributed by A. B. Kidde, of Denver.[1] The case seems to have been one of senile insanity, and the alleged cause to have existed purely in a delusion on the part of the patient. The relator has made a step backwards in mental therapeutics by humoring the delusion, a procedure which is, we are happy to say, being abandoned even by the educated laity. An article by Dr. J. M. Carr[2] on Puer-

[1] "Transient Mania from a Bed-bug in the Ear." Rocky Mountain Medical Times, January, 1882.

[2] Cincinnati Lancet and Clinic, December 10th, 1881.

peral Insanity, is worthy of more extended notice; it is plain, unpretentious, and practical. While some of its defects are doubtless due to the fact that the author does not appear to have had access to the recent publications of German and French psychologists, he has not fallen into any of the errors which seriously impair the value of certain of the contributions furnished by our trans-Atlantic brethren, notably Schmidt. Dr. Carr regards hereditary predisposition as the chief factor in this affection, an experience agreeing with our own. The prognosis in his experience was favorable, seventy per cent of the cases treated at the Dayton Asylum, to which the writer is an assistant physician, recovering, and only ten per cent dying. The majority of the patients recovered within six months, and those not recovering within this time may be looked upon as tedious and troublesome cases, though even these may eventually take a favorable turn. The treatment employed consisted in chloral, to produce hypnosis, and aloetic purgatives, to which Dr. Carr, like Schroeder van der Kolk, attaches great importance. In the maniacal form, which, as a rule, results in recovery more rapidly than the melancholic, if motor excitement is marked, conium is found of use. Under all circumstances, nourishing food is administered, and where forced alimentation is required, the nasal tube is preferred. It is a fact, flattering to the discrimination exercised by the authorities of the Dayton Asylum, that but in a very few cases was restraint found necessary. This seems to indicate that neither the ANTI- nor the PRO- form of restraint fanaticism has penetrated its walls. Other evidences of an enlightened spirit of treatment are manifested in Dr. Carr's statement, that while the visits of friends are injurious while the psychosis is in its inception or at its height, that these are beneficial when the patient is on the road to recovery.

Dr. I. B. Ayer[1] has recently reported a case of melancholia due to pneumonia, which was treated for two years and a half, the patient remaining at his home, which was converted into a *quasi* hospital. The patient manifested the first signs of improvement at the end of five months, beginning to knit, to do other light housework, and to call on her friends. In connection with this history, Dr. Ayer reports that of 5,116 patients received at the McLean Asylum during forty-three years, sixty-two had their insanity traced back to a febrile origin. Many of the conclusions of Dr. Ayer have been anticipated in the valuable monograph of

[1] Boston Medical and Surgical Journal, January 26th, 1882

Kraepelin. The doctor states that the "Climacteric Insanity" of Skæ generally takes the form of melancholia combined with more or less excitement; we believe that if the discrimination between simple melancholia and certain primary and secondary psychoses, of which depression and depressive delusions are casual features, were more strictly held apart in the paper before us, it would be more profitable to the reader. Of the 5,116 cases of insanity collected by the author, 51 were attributed to the climacteric period, 42 to uterine disease, and 167 to the puerperal state. For obvious reasons, little weight can be attached to the two former figures; it appears that the friends of the patients were the sources of information chiefly relied on. Attention is called to the rarity of the occurrence of recovery where the psychosis has lasted more than two years; but this well-worn assertion loses its specific value, when it is recollected that the prognosis after all depends in great part on the type of insanity manifested, and that certain forms are bound to get well, in spite of the worst treatment, and certain other forms bound to remain unaffected or to progress, in spite of the very best treatment; while the margin within which insanity can be influenced by therapeutic measures is at best a narrow one. In melancholia, so-called by Dr. Ayer, he has employed hyoscyamus and hyoscyamine, of course—what form of insanity have these preparations not been tried in, within the past six months, and in accordance with the latest therapeutical fashion bazar? Chloral hydrate, bromide of potassium, valerianate of ammonium, scutellaria, conium, morphia—in short, an *omnium gatherum* of neurotic drugs were employed in addition! And it is not at all remarkable that the "treatment" had to be kept up for so long periods before the patients recovered or became chronic invalids. Dr. Ayer calls attention to an interesting result obtained by Mr. F. C. Walker from the last census, namely, that many cases of recognized insanity are now treated at home. He also enunciates the very sound view, that in the case of patients whose disease is destined to run an acute or subacute course, asylum treatment is beneficial in the first year, but that later the association with friends is less prejudicial than that with insane surroundings; for, Dr. Ayer continues, "Asylums, as now conducted, afford little more than a place where patients can be isolated from society, kindly treated, and a watchful oversight maintained." It is evident from the views of this paper and that of Dr. Carr, that a more enlightened policy is destined to adoption in our institutions for the insane.

A case of what is termed "Aggressive Mania" is reported by Dr. W. H. Daly;[1] the psychosis was consequent on an attack of typhoid fever, and it is difficult to glean from the history whether it was much more than a febrile delirium. The new addition to our nomenclature essayed by Dr. Daly is not destined to survive his paper, we fear. If new terms are to be concocted on the strength of such a common evidence of mania and delirium as aggressiveness, the literature will become overballasted with names, and, perhaps, correspondingly defective in ideas. A clearer description of the case would have been more grateful to the reader, and more in place in a journal which has undertaken to pass *ex cathedra* criticisms on the witnesses who gave scientific testimony at Washington—criticisms as devoid of logic and fairness as they are demonstrative of a decided unfamiliarity with the subject of insanity of its editorial staff.

A case of insanity coming on after the use of duboisine is reported by Dr. J. J. Chisholm.[2] The duboisine had been used in a collyrium by a female aged seventy years. The chief psychical phenomena were destructiveness and a tendency to talk at random. The report of the case is not sufficiently detailed to permit one to decide whether the insanity was more than a toxic delirium.

An interesting paper is contributed by Dr. Yandell,[3] its contents being chiefly devoted to a consideration of the mental and motor phenomena displayed during religious excitement, particularly the religious "epidemic" which appeared in Kentucky, the Carolinas, and Tennessee in 1800. Epidemics of this kind appear to have been quite common in the Southern and Western States.

Dr. Featherstonhaugh,[4] in a discussion of the general subject of insanity, shows very strongly that he does not agree with the "Utica School" of alienists in their claim that there is no such thing as hereditary insanity. Dr. Hughes[5] similarly gives a *dementi* to the same circle in an article on Moral Insanity, which, while not claiming to contain anything novel, deserves prominent notice as a well-timed and bold declaration on behalf of the scientific psychiatrists of the land. His statement reads:

"Moral insanity is as clearly comprehended in this definition as other forms of mental derangement, and as much entitled to

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[1] Medical News, January 21st, 1882.
[2] Maryland Medical Journal, December 15th, 1881.
[3] Louisville Medical News, December 10th, 1881.
[4] Medical Annals, December, 1881.
[5] Alienist and Neuro'ogist, January, 1882.

be recognized as a distinctive appellation and form of disease as the many other mental affections that are named on account of their prominent symptomatic feature or features."

Close on the heels of this paper follows a comment by Folsom,[1] who, in a review of the subject, says: "The expert witness who denies that moral insanity exists, in the face of such careful and conclusive authorities as Dr. Ray and many others, declares that criminal acts are always criminal, that kleptomania is always stealing, and dipsomania is always drunkenness and nothing more, is himself in danger from a certain unwholesome self-conceit that might itself be likened to moral insanity."

In a paper read before the American Association for the Care of the Insane, entitled "Insanity in its relations to the Medical Profession and Lunatic Hospitals," Dr. Allen[2] calls attention to the fact that this subject is much neglected in our medical schools. The same criticisms have been advanced before and repeatedly. The discussion of the subject of lunacy reform would have gained much in every way, if readers of papers were for once to quit the domain of generalities. There could have been no nobler sphere of action for this society, than to interfere, with all the authority and power at its disposal, in the disgraceful farce enacted at Washington, against one of the class it claims to protect. If mental science and philanthropy were equally well-represented in this body, we should at least have seen some expression of dissent from the platitudes enunciated on the witness-stand on the part of those who claimed—erroneously, we trust—to represent the fraternity of asylum physicians there. But this subject was timidly avoided; the same old routine of valueless statistics, gathered from asylum records, projects to do away with insanity by means of education, and adulations of extreme non-restraint, as if that were the sole goal of psychiatry, occupied the time of this, as of other meetings, of the association.

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[1] New York Medical Journal. February, 1882

[2] Journal of Psychological Medicine January, 1881.

THE EVIDENCES OF INSANITY DISCOVERABLE IN THE BRAINS OF CRIMINALS AND OTHERS WHOSE MENTAL STATE HAS BEEN QUESTIONED; WITH SOME REMARKS ON EXPERT TESTIMONY AND THE GRAPPOTTE CASE.

BY

EDWARD C. SPITZKA, M.D.,

President of the New York Neurological Society; Secretary of the Permanent Commission of the New York Medico-Legal Society; Member of the American Neurological Association, etc.

(Read before the New York Medico-Legal Society, May 3d, 1882.)

WITHIN the past few years, this Society and the legal and medical fraternities at large have repeatedly had their attention directed to the question of medical testimony in relation to disputed mental states. If impartial lay observers have come to the conclusion that such testimony is of no great value, we of the medical profession cannot, in view of recent developments, deny that such a conclusion has some justification. It is but a year ago that a medical witness testified in one of our local courts[1] that vaccination is a disease of a blood-poisoning character, after asserting that, in *all* diseases of that character, the will power is enfeebled, with special reference to testamentary capacity. It is within the memory of all of you how a physician testified[2] that a given subject could not be suffering from general paralysis of the insane, inasmuch as general paralysis really meant death,

[1] New York Surrogate's Court, Wallace Will Contest.

[2] New York Supreme Court, Case of Abraham Gosling.

while his associate added that, in general paralysis of the insane, there never were any remissions of the symptoms. Still more forcibly has your attention been directed to a trial where, of a dozen witnesses, called without any question for the purpose of sustaining a preconceived opinion, one-half swore that a murderer was sane and shamming, and the other half that he was sane but not shamming, and where such pearls of wisdom fell from the lips of members of our profession as, that ill-balanced men are less likely to become insane than well-balanced men, that there is no such term as moral insanity in science, and no such fact in medicine as an hereditary transmission of disease.[1]

Medical testimony on questions of insanity in American courts of law has come to be regarded with doubt, if not with contempt, partly on account of the enunciation of such paradoxes and evident perversions of truth as those alluded to, partly on account of the unpalatable nature of some of the established dogmas of mental medicine. The suspicion under which the medical witness, sometimes justly, sometimes unjustly labors, of trimming his evidence to answer the purposes of the litigants employing him, has been perhaps the main source of the attempts made by thoughtful men in both professions to seek a remedy. Reference is frequently made to the fact that the discreditable conflicts of opinion so common in our courts of law are impossible on the Continent, because there the court appoints a commission of experts, who concentrate their attention on a given case from a strictly scientific point of view, and act rather as counsellors to the court than as employees of the disputants. The natural sequitur would seem to be that the introduction of a similar plan here would insure similar good results. But I greatly question whether those so believing have not arrived at too sweeping a conclusion, and have failed to

[1] Guiteau trial.

weigh many related and grave questions with sufficient care. In Europe, the court, perhaps not itself possessing that insight which would determine a wise choice of those who are to constitute a medico-legal commission, is at least secure against making an absurd one, by the fact that it is under moral obligations to choose from among men who as university teachers, or district physicians, or well-known investigators and authorities, may justly lay claim to proficiency in a special branch of learning. If such an obligation existed with our courts, it is doubtful, in view of the remarkable circumstances under which colleges spring into existence, the ease with which professorships and publishers are obtained, and the nature of the political and financial requirements involved in the obtaining of these and other distinctions, whether we might not, by adopting the continental method, exchange a system, defective and unscientific as it is, for another theoretically better, but practically more defective, more corrupt, and more objectionable in every way. We occasionally witness examples of the discrimination exercised by our courts in the appointment of a commission *de lunatico inquirendo;* the judge, at a natural loss whom to appoint as the "medical third" of the commission, consults his family physician on the subject, and, it so happens, sometimes finds the latter self-sacrificing enough to accept the position of critic on a matter concerning which he does not, and often avows does not care to, know anything whatever.

With such reflections naturally arising, it does not seem as if a medico-legal society in America should seek no other outlet for its energies than the imitation of the European plan of calling experts, merely for the sake of the plan. I grant that if, with the plan as it stands on paper, we could also import the laboratories, the matured educational institutions, and the excellent medico-legal

literature of France, Germany, and Italy, there should not be a moment's hesitation about its adoption. But until this can be done, unless the exotic can be transplanted with enough of its roots and soil to insure a healthy domestic growth, the most pertinent subject for your consideration will continue to be the one suggested by your President in his inaugural address, namely: the best means of determining the competency of experts. This is, after all, the fundamental question.

Contradictory as on first sight it may seem to many, I regard a judicious, thorough, and pertinent cross-examination of the medical witness as the method best calculated to solve this problem. I do not mean that, in order to constitute an expert's opinion a valuable one, it should always pass the ordeal of a cross-examination, but that it should be liable to that test. I believe that, particularly in criminal trials, even with our present laws, many medico-legal farces would be avoided if the district-attorney could divest himself of the conception that he must never, under any circumstances, admit the possibility of insanity existing in a murderer, and if he would correct the delusion that his re-election depends upon the number of persons he can convict, be they guilty or not guilty, sane or insane. Even here, where it is so clear that an examination of a subject's mental condition should be made before the trial, I do not believe that either science or justice will suffer from the announcement and defence of the opinion formed after such examination, in public. Nor do I mean by cross-examination, the process of badgering resorted to in our lower and sometimes in our higher courts, for which a high moral tone on the part of both the bench and the bar is the only corrective. I mean an inquiry closely directed to the physician's knowledge of the teachings of his masters, of the existing state of science, and of his record as an expert. Within these limits, the more

searching the cross-examination, the better for the dignity of science, the true ends of the law, and for the expert himself, if he be an honest and scientific one.

The witness who cannot clearly announce his opinion, give his reasons for it, support himself by established authority and make his meaning approximately clear to intelligent lay minds, is very apt to be sifted out by the proper manipulation of this valuable, if much abused instrument. And if it be urged that many men of large experience and voluminous reading, cut a poor figure on the witness stand, and suffer under critical cross-questioning, I can account for such a fact only on the ground that their experience has either not been systemized, or their reading unassimilated, or that such experience and reading have been rather detrimental than otherwise, to the formation of logical habits of thought; at most it may be urged in their behalf that they are sufferers from a form of nervousness which should preclude their entertaining any ambition to speak in public on questions of a legal nature. I should be very loth indeed, at least for years to come, to see the present verbal process done away with, and the expert's function reduced to the submitting of a written document. It seems to me that with the necessarily theoretical and empirical character of many of the accepted dogmas of medicine, even the most carefully and conscientiously prepared documentary opinion will contain some one or other conclusion which the one writing it should not fear to submit to the test of close analysis on the one hand, and yet which can involve a doubt, even as a doubt of the most material importance, in a criminal or civil trial, on the other.

Those members of the medical profession who cherish a serious desire to improve the status of medical expert testimony can do their own profession no greater service than to assist members of the bar in the elicitation of the

qualifications of those assuming the position of experts, by instruction in some of the accessible provinces of science. It is my intention this evening to contribute an humble mite to this end; in making the attempt I have at least the one excuse, that the subject of which I propose to treat is now brought before the society for the first time.

It is evident that any assertion proceeding from an alleged scientific source and promulgated in court, will gain in value with the extent to which its truthfulness can be gauged by the evidence of our senses, or otherwise rendered demonstrable by material means. With experts in fields other than that of insanity, such methods are frequently applicable, and are applied to test the correctness of an opinion, as well as the competency of the expert pronouncing it. The practical demonstration of the truth or fallacy of each such opinion is of very great weight as a precedent, the margin of allowable honest difference of opinion becomes gradually narrowed, and with each closure of a loop-hole for error, the given science attains more and more nearly to the dignity of an exact, forensically reliable and immutable branch of human knowledge.

Have we such means at our command in the field of forensic mental medicine? Is there any gauge by which the truth of an expert's opinion can be tested, other than by his agreement with established authority, with current thought and knowledge, and his general familiarity with the anatomy, physiology, and pathology of the nervous system, on which pedestals his knowledge of insanity must rest if it claims to be more than a metaphysical chimera?

When a boiler expert pronounces a boiler capable of sustaining high pressure, and the latter shortly after, with ordinary precautions, explodes under low pressure, that expert's reputation is apt to share the fate of his boiler. If an expert on buildings pronounces a house safely habita-

ble, whose foundations are insufficient and whose main walls show rapidly widening cracks, his reputation runs a similar risk with the prospective tumble-down. In like manner, the expert on insanity who pronounces a criminal or suicide to have been of perfectly sound mind, but in whose brain the scalpel and microscope shortly thereafter reveal the anatomical evidences of insanity, is not apt, if the fact becomes known, to again speak with authority in courts of law, particularly when the life of an alleged lunatic is at stake.

The question which I propose to discuss this evening naturally falls into several sub-questions. The first is: Whether insanity is always associated with visible evidences of brain disease? The answer to this question is, No! The second is: Whether the morbid appearances found in the brains of insane persons are ever found in the brains of persons known to have been sane? The answer to this question is, that some of the appearances described by certain authorities as related to insanity, are found in every sane adult, and still other of the common findings in the insane brain, are found occasionally in the brains of persons of ordinary soundness of mind. The third is: Whether there is any constancy in the association of any special disease of the brain with special forms and stages of insanity? The answer to this question is, that with some forms of insanity, the post-mortem almost attains the value of an exact test of the diagnosis, while in others it does not; this is owing to the constancy of certain signs of brain disease in some forms, and their inconstancy with other forms of insanity.

Nothing could be more satisfactory from a general scientific as well as a medico-legal point of view, than the ability to demonstrate the past existence of insanity in the dead brain. Quite aside from the case of the execution of a murderer, whose alleged defence of insanity might be

tested on the assumption that his brain should show evidence of the disease if it had existed, a post-mortem could be utilized to confirm or reject the claim that a given suicide, who had previously insured his life at a high figure, was insane at the time of his suicide. That there are other instances where post-mortems and their findings may may be offered in evidence, and have been actually received as such, in cases of contested wills and contracts, you are all doubtless aware. It is hence of the highest importance to determine the actual state of science in regard to the questions enumerated.

"Thirty years ago, I would willingly have written on the pathological cause of insanity; to-day I should not attempt as difficult a task, so much of uncertainty and contradiction is there in the results of post-mortems made on the insane to this very day." Thus wrote the great Esquirol half a century ago; one[1] of the cotemporary French alienists, after citing this passage, adds, "What Esquirol said at the time he wrote, that might he have adhered to, to this day, notwithstanding the incontestable progress which has been made more recently in the pathology of mental diseases. Although, during the last few years, experimental physiology, pathological anatomy, and histological researches have yielded valuable acquisitions to the pathology of the nervous system, this cannot be equally claimed in relation to insanity properly speaking; the clinical study, the direct observation of patients, have contributed much more to advance this branch of science. It is indeed to-day possible, with a large number of diseases of the nervous system, to establish the relation between lesion and symptom; this approximation is, however, even to-day almost impossible with the greater number of mental diseases."

While the two extracts here quoted fairly represent the

[1] Dagonet: Nouveau Traité élementaire et pratique des maladies mentales.

views of the classical and modern French authorities, the following almost identical citation indicates the state of opinion in Germany, that land which divides with France the honor of standing in the front rank of mental medicine. "In turning to pathological anatomy for enlightenment, it cannot be suppressed that in a certain number of post-mortems of the insane, palpable morbid appearances of the brain are absent. . . . Experience teaches that it is almost exclusively the primary forms, the first stages of insanity, in which we find nothing palpable in the autopsy, and must content ourselves with assuming anomalies of innervation, blood-distribution, and chemical composition."[1]

Quotations of a like character might be multiplied, but they would only serve to show the unanimity of the most eminent specialists, now living, on this question.

In mania, properly so-called, the acute mania of English writers, a form of insanity comprising about fifteen per cent of the admissions to a large number of asylums, whose statistics I have collected, no deviation from the normal structural conditions has been found. The nerve-cells and their fibres show absolutely nothing that can distinguish them from the nerve cells and nerve-fibres of healthy persons. The only appearance revealed with any degree of constancy in uncomplicated cases is a fulness of the cerebral blood-vessels,[2] which in extreme instances may be accompanied by hemorrhages or hemorrhaginous transudations. In these and other cases, metamorphosed elements of the blood are found scattered through the brain cortex and sometimes throughout the white sub-

[1] Krafft-Ebing, Lehrbuch, I., p. 11. This quotation is well supplemented by Schüle (*Seq.*).

[2] Calmeil, Article Manie, Dict. de Méd. etc.; Meynert, Psych. Centralblatt, 1871; Westphal, Charité-Annalen, I., 1876; Ripping, Die Geistesstörungen der Schwangeren, Wöchnerinnen und Säugenden. Stuttgart, 1877; Mendel, Die Manie, 1881.

stance. In those cases which I have myself examined post mortem I have found nothing[1] beyond a very slight degree of cortical hyperæmia, and one not differing from the hyperæmia found in sane persons dying with certain lung diseases, and not equalling that hyperæmia found in the brains of those dying of fevers. In not a single accurately studied case, reported by trustworthy observers, has a lesion of the essential mental apparatus been found, nor has any doubtful appearance of any kind been discovered that has not been found, in varying degree, in sane persons also. The latest and fullest writer[2] on mania concludes his chapter on pathological anatomy, naturally the most meagre in his work, with these words: "From all this I draw the conclusion, that mania is a disease, whose patho-anatomical basis we have thus far not been able to discover in the brain. In this light, we must look upon it as a functional disorder of the brain, because those alterations (of the brain), which must be supposed to determine the disturbance of the cerebral functions, are undemonstrable with our present means of investigation."

When we recollect that only from two to five per cent of maniacs die, and that, consequently, chiefly those subjects reach the post-mortem table, in whom, either through complications or an intensification of the maniacal excitement to the degree of maniacal exhaustion, the brain disturbance must be assumed to have reached a far higher pitch than in the ninety-five per cent recovering; when we bear in mind that Esquirol, Griesinger, and others consider the possibility of (and there are cases to prove) the causation of maniacal symptoms by proceses associated with anæmia, instead of hyperæmia of the brain, it must be clear that the evidence concerning the

[1] I except from these remarks my findings in a single case of *Mania gravis*, a condition which I do not agree with Mendel in classifying under the head of "Mania," properly so called.

[2] Mendel.

tangible signs of a form of insanity comprising about fifteen per cent of all asylum admissions is fragmentary and inconclusive, where it is not entirely negative.

Nearly the same remarks apply to simple melancholia; the most complete series of investigations, that by Meynert, yielded no other result than the conclusion that cortical and meningeal hyperæmia are far rarer here than in mania, and on this he was enabled to base some ingenious hypotheses. My own investigations, including the examination of several melancholiacs dying in asylums, and of a suicidal melancholiac, whose case, from a surgical point of view, has been brought before you by Dr. E. C. Harwood, have satisfied me that, with our present means of investigation, a change in the nervous structures is not demonstrable.[1] Even in melancholiacs whose symptoms have reached the degree of cataleptic stupor, the morbid appearances, such as œdema of the membranes and pallor of the cortex, are naturally referable to starvation from prolonged refusal of food, and to the lung diseases which are so frequently causative of, and concomitant to, this affection. These differ so little from the similar appearances found in ordinary hospital patients dying from inanition and phthisis, that we can only conclude, as in the case of maniacs who recover, that the larger proportion of melancholiacs exhibit nothing positively demonstrating their disease in the brain structure.

How uncertain the anatomical basis is in those forms of insanity for which I have recently defended the retention of the term "monomania,"[2] forms comprising as much as twenty-five per cent of some asylum admissions, cannot

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[1] I except from this a case of katatonia (melancholia attonita of some authors).

[2] St. Louis Clinical Record, 1880, the term, properly limited, corresponds to the *monomanie* and *lypemanie chronique* of older French writers, the *folie systematisée* of *Marcé*, and the *Primäre Verrücktheit* of the Germans.

be better illustrated than by a citation from the writer[1] on the subject of insanity in Ziemssen's Cyclopædia. "The pathological anatomy of monomania is the most meagre chapter of our generally extremely moderate knowledge of pyschological morbid anatomy. In the case of some 'original monomaniacs' (*Originäre Verrücktheit*), Sander and Muhr have called attention to interesting anomalies of the skull and brain, in part congenital and in part acquired in early infancy. But for the great majority of those later attacked by monomania, no gateway promising to lead with any certainty to the laboratory of these serious and deeply grasping changes, which attack the very essence of the *ego*, has been so far discovered."

In epileptic insanity, sometimes comprising eight per cent of asylum admissions, no morbid appearances can be found in a large number of recent cases, and those found, such as asymmetry of the brain and skull, indicate rather the frequent hereditary and congenital origin of the disease than explain the exact basis of the insanity. Even in advanced cases of epileptic insanity, it is not the exception to find but very slight and doubtful indications of the disease post mortem. With chronic mania, dementia, and other terminal deteriorations, the brain is more constantly diseased, it is diminished in weight, the convolutions appear shrunken, the cells of the brain-rind wasted, the blood-vessels show the vicious influence of long-continued disturbances of the blood-supply, but even here there are ases where the post-mortem evidence is not conclusive. With imbecility and idiocy, anatomical evidences of imperfect brain development are common; in a case of this kind, the murderer Redemeier, executed at St. Louis, a portion of whose brain I exhibited at a meeting of this body, evidences of an arrest of development, as well as associated

[1] Schüle, p. 489.

peculiarities of the skull, were found.[1] Finally, in progressive paresis of the insane, the disease familiar in some of its prominent features to those who attended the meeting devoted to a discussion of the Gosling case, the post-mortem record is more satisfactory. It is safe to say that if, in a case where this disease is claimed to have lasted longer than a year, certain changes in the nerve-centres are not found, the opinion is seriously impaired.

Summarizing the teachings of the master minds in pathology, of reliable observers generally, and my own experience, I consider myself justified in saying that positive and indisputable evidence of insanity cannot be found in more than thirty per cent of the insane, that in another thirty per cent slight changes are found, not differing in character, though perhaps in extent, from what we observe in some sane subjects, while, in the remainder, there is no visible deviation from the normal standard of any kind. To be more specific in regard to the various forms of insanity, I may represent the likelihood of finding structural changes in the insane brain as follows: In mania, a disease which may lead to forgeries, thefts, extravagant expenditure, and destruction of property, though rarely to homicide, that likelihood is as 5 : 100. In acute melancholia (strictly limited), leading to suicide, to the murder of the most cherished relatives, and, in the episodial frenzy, to attacks on strangers, it is almost zero. In epileptic insanity, frequently responsible for the apparently most brutal acts, it is as 20 : 100. In monomania, which may be at the basis of any crime, from contempt of court and libel to the immolation of a cathedral, or the assassination of the ruler of a nation on the one hand, and of insanely fraudulent or absurd contracts and insane dispositions of property on the other, it is as 5 : 100. In the terminal states, it is as 60 : 100. In imbecility and idiocy, as

[1] St. Louis Clinical Record, 1881.

80 : 100. In progressive paresis of the insane, it reaches the figure 99+ : 100, and here alone and in insanity with organic diseases, does the autopsy approximate the dignity, from every point of view, of a scientifically positive test. I do not give these figures as exact, but only to indicate as nearly as figures deduced from a comparison of authorities and experience can, the degree of certainty with which a post-mortem finding may be anticipated, and the extent to which it may serve as the test of an opinion.

If, then, insanity has been set up as a defence, in a criminal trial, or advanced as a ground for voiding a contract or breaking a will, or as an explanation of a suicidal act, the absence of lesions in the brain of the deceased subject, whose mental integrity is impeached, does not weigh as a straw in the balance in favor of the contrary litigants. I say of insanity in general; it is different with special forms of insanity. As I have hinted, the absence of lesions in alleged advanced paralytic insanity, or other insanity associated with organic lesions, such as sclerosis, tumors, and meningitis, would materially weaken the allegation. Aside from such cases, the advantage is apparently with the allegation of insanity, inasmuch as the one alleging its existence cannot be contradicted by the post-mortem evidence, while his opponent takes the chances of being proven in the wrong. But this is neutralized by the fact that, impossible as it is to deny the existence of acute mania, melancholia, and monomania, on the strength of a negative finding, it is exceptional and as difficult to establish their previous existence by a satisfactory positive finding, and by the further consideration that cases of mania, melancholia, and monomania, associated with brain changes palpable to our methods of examination, must have been more palpable even during life, and that thus a difference of opinion, both expert and honest, ought to have been out of the question before the death of the subject.

There are a number of cases on record where the post-mortem test of insanity was applied; in some of these cases, as in that of the California murderer Troy Dye, who it is alleged feigned insanity, the negative findings of the autopsy were erroneously utilized to support the claim of sanity. In the Waltz case, the interposition of Dr. Kellogg, of the Poughkeepsie Asylum, on behalf of the prisoner's insanity, and to support which claim, he read a paper before this Society, was resented to such an extent that one of the experts, who had testified to the opposite view, and whose journal was employed to attack Dr. Kellogg, had a post-mortem examination of the brain of the executed murderer made by a subaltern, which resulted in the transmission of a telegram to Governor Dix, implying that the examination demonstrated the sanity of the murderer. Such a claim, advanced in such a way, can be called nothing more than an attempt to strew sand in the eyes of both professions and of the public.

In a large number of cases, interesting the medical jurist, the autopsy has demonstrated the existence of gross disease or malformation of a kind almost or exclusively pathognomonic of insanity. I will here but refer to the fact that, of 594 post-mortem examinations on suicides made between 1873 and 1875, in Wurtemberg, lesions of the brain and its envelopes were found in forty-five per cent. This enormous proportion is to be accounted for on the ground that suicide is of more frequent occurrence among the insane and sufferers from meningitis and other organic disease of the brain, associated with depression and pain, than among the sane and healthy.

In a case of infanticide reported by Krafft-Ebing, which he designated as one of puerperal melancholia, the murderess was found to have tubercular inflammation of the cerebellum,[1] that affection causing her death some time

[1] Friedreich's Blätter, 1868, vi.

after her crime. In the celebrated case of Lemaire,[1] who, at the age of nineteen, killed his step-mother, whom the prosecuting attorney himself pronounced a moral monstrosity, and who was executed notwithstanding the plea of insanity, which his counsel failed to support by calling experts, the post-mortem revealed arrested growth of the skull and evidences of an intense and extensive meningitis, which had in early life produced convulsions, club-foot, and strabismus. In the case of Sandon,[2] who had made certain charges against certain persons, their insane basis was revealed by the post-mortem examination of Sandon's brain, which showed the evidences of paretic dementia. Krafft-Ebing, in his article on anomalies of sexual inclination, refers to the case of Feldtman, executed for the murder of his daughter in an attack of morbid sexual frenzy; the distinguished French anatomist Breschet found the brain diseased—a fact of some weight when it is borne in mind that Feldtman's insanity had been testified to by several lay witnesses. In the case of Leger, executed for the murder of a little girl, on whom he committed successively rape, murder, and cannibalism, tearing out the heart and drinking the blood of his victim, Esquirol found morbid adhesions of the membranes to the brain surface.[3] If these two last post-mortems prove nothing else, they furnish us with the consolatory reflection that at least some of those crimes, from which whole nations and communities have turned with natural horror, and which are as blots on the race, were in reality the outgrowth of disease. Occasionally a post-mortem examination of an executed person has been made without any reference to the question of sanity, and accidental revelations have thus been placed on rec-

[1] Delasiauve, Journ. de médicine mentale, 1867, No. 5.

[2] Krafft-Ebing's Uebersicht f. 1865–1875.

[3] Krafft-Ebing quotes these cases from Georget, whose monograph I have been unable to obtain.

ord, which might seem calculated to stagger those who failed to consider, or to admit the doubtful responsibility of the subject during the latter's life. In the case of Lammens, who you may recollect was executed in New Jersey, together with his partner in crime, a woman named Meyerhofer (whose husband had been their victim), a post-mortem examination disclosed the existence of a tumor in the brain.[1] While such growths of small dimensions are often found where the mental integrity has not been seriously impaired, the finding in Lammens' brain is of some significance, as the trial showed unquestionably that he did his share of the murder under the dictates of the stronger will and influence of his accessory. He showed evidences of mental weakness and gross lacunæ of the memory, evinced in the non-recognition of his wife, and of other matters which involved the recollecting power.

I am acquainted with but one case, where the microscopic preparations obtained from the nervous tissues of a deceased person were utilized in evidence during a trial. It is a will-case still in litigation, in one of the Western States. The specimens were sections taken respectively from the brain-cortex and the spinal cord; they presented the characteristic signs of paretic dementia, and a number of physicians with myself were able to declare that the subject from whose body the specimens had been obtained, was suffering from that disease at the time of his death and must have been insane for years previous.

While the cases, here briefly cited, show that post-mortems have been made on the brains of the insane, sometimes to complete the chain of evidence, sometimes merely to test the truth of an opinion in the abstract, while the negative findings in the cases of some deceased criminals and suicides have been erroneously thought to support

[1] Unfortunately a scientific report has not been published; the fact was given to the press without comment.

the view that they had been sane, and the positive evidences in others demonstrated the correctness of the opinion of those pronouncing such persons insane, I know of but a single case where the record of actual findings in the brain of a person whose mental state had been questioned, was distorted or suppressed. Without making any narrower allusion than is absolutely necessary for the purpose of identifying the case, I will say that the same case has been brought to your attention on a previous occasion, that the misrepresentation to be alluded to, was made on that very occasion, and it seems but proper that our transactions should embody a correction of the important and demonstrable error in the record.

On March 4th, 1876, one Francis Grappotte killed one Simon Hoover, near Le Roy, Jefferson County. He was tried before Judge Noxon at Watertown, and convicted of murder in the second degree; the prisoner committed suicide by hanging, in his cell, the following night. At the trial several persons, including prominent physicians of Watertown and its vicinity, testified to the insanity of the prisoner. The prosecuting counsel called to his assistance as an expert a physician, who subsequently read the paper referred to before this Society. In that paper it was stated that the prisoner had been feigning insanity at the time of the trial, that in his, the reader's, opinion, the prisoner was sane, and that the post-mortem examination confirmed his view. Let us therefore examine the facts of the case, the nature of the testimony given, and the report of the post-mortem. From a transcript[1] of the stenographer's minutes I have gleaned the following facts:

Francis Grappotte, aged fifty-eight, was born in France, came to this country as a youth, married, and acquired a competency; in 1841 he sustained an injury to his head, which the defence

[1] Kindly loaned to me, at the instance of Dr. H. G. P. Spencer, of Watertown, N. Y.

claimed was severe, and the prosecution "of course" claimed was slight. Drs. Kilbourn Hanna, Grafton, Henry G. Spencer, Trowbridge, Henry M. Stephens, Leroy Jones, Eben Carlisle, and James D. Spencer testified to the prisoner's insanity at various periods of his life, extending down to and beyond the period of the crime. The insanity manifested itself chiefly in the direction of melancholia, and more or less perfect histories of outbreaks of such a condition were given for the period of time included between and others dating from the years 1854 and 1855; delusions of persecution and fear occurred in 1864 (Dr. Eben Carlisle). In 1866, 1872, 1873, and the spring of 1874, similar symptoms, associated with marked depression, physical prostration, sleeplessness, violent headache, and *tædium vitæ* were observed, the attack of 1866 culminating in a suicidal attempt. Both in 1864 and 1872 he contemplated leaving his residence, for fear of being killed, when there were no grounds for such a belief (testimony of Dr. Carlisle). Dr. Grafton, who examined and prescribed for him in the spring, a year preceding the homicide, considered him at first intoxicated on entering his office, but subsequently found that his appearance and behavior were the outcome of mental derangement; he was vacillating, lachrymose, irresponsive, spoke in monosyllables, and complained of violent pain in his head. For two months preceding the homicide he was treated for insanity, under the diagnosis "melancholia," by Dr. Leroy Jones; his symptoms then had been, on the whole, a repetition of those testified to by Dr. Grafton; in addition there were noted a suicidal tendency and profound deterioration of the physical state of the patient. He sat with his head drooping, could with difficulty be made to answer questions, was indifferent to his business, had a haggard look, was sleepless, suffered from pain in his head, stated that his wife was better off without him, that he ought to be arrested and sent to an asylum, could not make up his mind to do anything, alleged having many troubles, but could not state them, worried about his defective education, and wept without cause. Towards the end of this period, on the 21st and 27th of February, the latter date preceding the homicide by five days, the doctor noted, in addition, profound agitation, manifesting itself in restlessness and muscular tremor and twitching, as well as in the physiognomy and behavior of the patient. He found it necessary to warn the relatives. Dr. H. G. Spencer, who was consulted with regard to his condition while in jail and after the act for which Grappotte was tried, testified that he was then insane, that he suffered from delusions, and that his mental state bordered on dementia. This

witness, whose testimony would have been most invaluable, inasmuch as he saw the prisoner immediately after the homicide and examined him repeatedly up to the time of the trial, was cut short in his evidence on a motion of the prosecution, the Solon on the bench ruling *verbatim* as follows: "If the doctor has any way to state, *aside from the answers of the prisoner*, as to the question of loss of memory, he may answer." Dr. James D. Spencer, the regular attending physician of Grappotte while at the jail, testified similarly, and stated that there was some variation in the prisoner's mental condition from day to day. The circumstances of the killing were as follows: Grappotte was riding in a sleigh with his son, being met by a neighbor three-quarters of an hour before the act; the latter was startled by his appearance and behavior, Grappotte did not answer his questions, but stared at him in an alarming way (testimony of Eloise Steblin). The prosecution offered the following account of the act itself: While riding home with his son, Grappotte suggested to the latter that they might ride round by Hoover's and pay Hoover the interest on a mortgage which was due. His son assented, but Grappotte changed his mind and concluded to wait until some other time. Hoover passed them, however, shortly after, also in a sleigh, and Grappotte motioned to the man with Hoover to stop; before the sleighs could be stopped they passed each other several rods. The prisoner was standing on his sleigh, Hoover left his and getting on Grappotte's sleigh, walked up to the son, shook hands with him, said that the son or his (the son's) wife was a good Christian, and was asked by the elder Grappotte, how much the interest was. Hoover replied that Grappotte knew how much it was, and the latter, drawing out his pocket-book, gave it to his son, who took out some money and counted it. While the latter was so engaged, Grappotte drew out a knife and stabbed Hoover in the abdomen; Hoover backed off, went into his own sleigh, unpursued by Grappotte, and was driven on, dying in about an hour from the wound. The murderer meantime got off the sleigh, threw off his overcoat, said he was going to kill himself, and put the knife to his own throat. His son, a much smaller and less powerful man, succeeded in taking the knife from him, on which Grappotte took a stake from the sleigh, from three to four feet long and about one and a half inches in diameter, and beat himself over the head with it, quite a number of times; the blood flowing freely from the wounds he produced by the blows; he said when he saw the blood, that it was good. His son, assisted by another, now overpowered and bound him hand and foot,

the prisoner saying, "For God's sake, do not tie me, I will go with you." He was then taken to a hotel and guarded. From the testimony of Drs. H. G. Spencer and Leroy Jones it appears that they were immediately called to attend to the prisoner's wounds. They found an irregular scalp wound between eight and ten inches long, extending from the forehead to the back of the head, the scalp being separated from the skull in places for from one to three inches, and several of the flaps being in such a condition as to require removal. A careful examination was made, but no fracture of the bone found. The prisoner had a feeble pulse and remained unconscious or stupefied for several hours; in the evening Dr. Spencer found him delirious, raving and crying out against several persons who were holding him when he entered the room. The following day he was quieter. Erysipelas set in and Dr. James Spencer, being approached on the subject by the sheriff, declined to give a certificate of insanity, as the prisoner could not be then removed from jail, owing to the surgical disease. A motive for the crime was claimed to exist by the prosecution. It seems that three sons and three daughters of Grappotte had married Protestants, he himself being a Catholic. They also attended a Methodist church of which Simon Hoover, the victim, was a prominent member. Grappotte had certainly had some dissension on the subject of religion with his family, but it was neither proven nor attempted to be proven that he was a zealous sectarian, and the contrary would seem to have been the case, if he himself permitted his daughters to attend Methodist prayer meetings. The particular connection of Hoover with these religious questions was also allowed to remain a gap in the evidence, and to supply this probably, the prosecution placed a witness on the stand who testified that Grappotte had one day said, on seeing Hoover pass, that he was not an honest man, and was not fit to live. In measuring, however, the value of such evidence, it is to be borne in mind that one of the chief witnesses for the people was shown to have exhibited a strong bias against the prisoner, and to have expressed a strong desire to see a rope around his neck. As to the interest which Grappotte was about to pay to Hoover, it was on a small mortgage, had been regularly paid, there had been no dispute about it, and Grappotte was well able to pay it. The prosecution introduced evidence to show that, eight years previous, Grappotte had knocked down a man in the course of a conversation about religion. The witness, however, was unable to indicate the character of the conversation preceding the assault. The prosecution claimed that Grappotte was quarrel-

some, the defence as in duty bound and altogether irrelevantly asserted that he was peaceable. He could not bear stimulants well.

It is rarely, indeed, that the defence of insanity in a criminal trial has so much of positive information and reliable professional evidence to support the plea. The medical profession of the county, as far as represented at the trial, agreed in the opinion that the crime was the outcome of insanity; several physicians had treated Grappotte in previous exacerbations of his mental disorder, one of them had treated him down to the period of the homicide, two had examined him a few hours after the latter, and several had examined him at different periods in jail. By none of these gentlemen, and at none of these times, was he considered sane. The diagnosis was melancholia, latterly verging on dementia, and in the course of the hypothetical part of the examination of one of the physicians alluded to, it was stated that the blow received thirty-five years previous could account for the subsequent attacks of insanity by inducing an affection of the brain membranes. This statement came nearer to the subsequently obtained post-mortem record than any other made during the trial. The prisoner, as related, committed suicide, by hanging, the day after he was convicted of murder in the second degree. Several of the physicians who testified were wisely present at the autopsy, which, together with a microscopic examination, was made by an employee of the Utica Asylum, and a friend of the medical witness who testified in favor of the prisoner's sanity. The following is the report submitted to the coroner, and published so far in no scientific periodical, but only in a Watertown secular journal. Perhaps on hearing this report read, you may be able to surmise why it was not published, as it should have been, in connection

with the paper in which it was alleged that Grappotte shammed insanity, and that the autopsy proved it.

"POST-MORTEM EXAMINATION OF THE BODY AND MICROSCOPIC EXAMINATION OF THE BRAIN OF FRANCIS GRAPPOTTE.

"Body well developed; rigor mortis well marked. Encircling mark around the neck from strangulation. Scalp showed, on section, the residue of ecchymoses extending downward from the vertex in all directions. Skull showed a deformed fusion of the occipital bone with the parietal bones in the occipito-parietal suture, apparently produced by a slight dislocation of the bones at some period during life. The occipital bone and the frontal bone thick; the diploë of the latter filled with compact bone. Membranes.—On removing the calvarium, *extensive adhesions of the dura mater to the frontal bone were found; also adhesions of the dura beneath the occipito-parietal suture, and at several insulated places to the temporal bones. Over the first frontal convolutions, old adhesions between the dura and the pia mater by fibrous bands.* Brain was well developed, and showed over the left and a part of the right upper frontal convolutions, beneath the pia mater, a recent exudation of arterial blood; at the base of the brain, a recent exudation of clear serum. The lateral ventricles contained a small quantity of clear serum. Slight calcification of the basilar artery at the point of origin of the middle cerebral arteries. The brain substance was of normal consistence. The gray matter of the convolutions and a part of the adjacent white layers exhibited on section a rosy tint from recent arterial congestion. A description of the thorax and abdomen follows."

"MICROSCOPIC EXAMINATION OF THE BRAIN.—The gray cortical substance of the vascular system of the brain[1] revealed a full normal supply of blood-vessels in all parts. *Scattered through the tissues, however, especially at the base of the brain, there were many residua of degenerated and obliterated arterioles and capillaries.* They represented small stems or shrubs with two, three, or more branches, lined by irregularly thickened hyaline walls of a fibrillous structure. Other vessels still in function and filled with blood, especially in the lining layers of the ventricles, exhibited beginnings of the same degeneration. The lining

[1] So in the original, probably a typographical transposition.

layers of the lateral ventricles, also the third and fourth ventricles, showed an amyloid infiltration. The same in a lesser degree was observed in the white layers which pass from the crura cerebri into the corpora striata, and into the connective tissue of the medulla oblongata and the pons Varolii between the anterior and posterior roots of the pneumogastric, the trochlearis, and the abducens. *The nuclei of pneumogastric and the trochlearis were marked by an abnormal pigmentary infiltration of their cells. Also the nuclei of the facialis, the trigeminus, and the anterior nuclei of the optic thalami exhibited the same pathological condition, although in a far less degree.* No lesions were detected in the other parts of the brain.

"SUMMARY.—The deformity at the occipito-parietal suture is the result of the injury which, as stated in the history of the deceased, was received about thirty-one years ago. The adhesions of the dura mater to the calvarium, and those between the dura and pia mater, are the evidences of local inflammation of the membranes, probably following the injury referred to. The recent exudations of arterial blood, of serum, and the arterial congestion found in the substance of the convolutions, are to be considered as consequences of the act of strangulation.

"The lesions observed in the vascular arrangements, the presence of degenerated and obliterated blood-vessels, the amyloid infiltration, and the pigmentary deposits are all to be considered as the result of repeated disturbances of the circulation. In all parts of the body, degenerations and final obliterations of small blood-vessels take place, and new ones develop, only temporarily affecting the organ in which such changes occur. The amyloid and the pigmentary infiltrations indicate that there had been, at times, dyscrasic conditions of the blood. The pigmentation is the result of melanæmic dyscrasia which is associated with local hyperæmic conditions. The enlargement of the spleen in this case is an illustration of this point. Where the coloring matter of the blood in such cases exudes, it is taken up and deposited in the cells of the adjacent tissues. Both conditions, the amyloid and the pigmentary infiltrations, are true pathological alterations, which must impair, to some extent, the functions of the tissues involved.

"CONCLUSIONS.—In regard to the question of the insanity of the deceased, as far as at present the state of our knowledge permits of a decision from the examination of the dead body, it must be taken into consideration that insanity is a physical disease, and in all its forms is a disease of the brain, in the course of which

its peripheric layers become involved. It is not a mere complexity of symptoms, but of symptoms depending upon an abnormal condition of the organ of the mind. *In a case of true insanity, therefore, the peripheric districts of the nervous centres themselves must show some evidences of pathological alterations in their structure.* Injuries to the head frequently do initiate such alterations and are causes of insanity. If insanity arises from injuries, the longer its duration, the more marked and extended are the progressive alterations. *In the present case, the injury received by the deceased has apparently led to no such alterations in the nervous elements of the brain.* The condition of the skull and the thickening and the adhesions of the membranes are the only direct results of the injury. We must look upon the others as having occurred at various periods of life. The seat of the morbid changes in the nerve structure mentioned is not in those districts of the brain in which are located the centres of the mental faculties, that is, the convolutious of the hemispheres. The parts involved are those which constitute *the centres of organic life*, and the nature of the pathological changes themselves presupposes *only temporarily disordered conditions.* (Signed)

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Many of the passages in this report I submit to the notice of my colleagues without comment; they will, no doubt, detect the misstatements of science therein. All will be able to recognize the absurdity and fallacy of a claim, that a post-mortem demonstrating that a head injury, which led to a deformity of the skull, to extensive inflammation of the brain membranes, and which further demonstrated the existence of degenerative processes in the nervous tissues as well as the blood-vessels, proved the sanity of Grappotte. In the light of the unexpected revelations of this autopsy, a review of the medical testimony offered to prove Grappotte sane acquires an almost tragical interest. Nothing could better illustrate the absurdity of an exclusively hypothetical examination in cases where there is a living prisoner at the bar. Here was a man whom every competent witness who saw him

during life, before and after the act, and while on trial, pronounced insane, in whose dead body material evidences of no doubtful character sustaining that plea were discovered; and yet on a fictitious hypothetical statement, a physician takes the stand to assist the prosecuting officer, not in vindicating the law, but in contradicting the highest authorities, and who, instead of defending the teachings of science, trims a questionable kind of medical psychology to suit the emergencies of the case, as presented to him by his employer. I summarize part of this evidence:

Among the dicta promulgated by the witness were the following: A melancholiac never commits homicide without a delusion, the witness never had seen or read of such a case. Never knew a lunatic to change his purpose when he had formed one, unless prevented by some one else. A man presenting the symptoms observed by the physician treating him before the homicide (hypothetically related), was *sane* and the opinion of witness that such a man was sane was *strengthened* by the fact that the man drank freely, became frequently intoxicated, was quarrelsome, passionate and bad-tempered, engaged in quarrels drunk or sober, and in fights on slight provocation, threatening to kill the object of his wrath, and throwing a deadly weapon at a man on slight provocation.[1] If a man had an attack of insanity, twenty, ten, and five years ago, and now, the witness would not connect the attacks at all, but could not name a single authority in support of this position. The divisions of insanity are "mania, melancholia, dementia, and general paresis." Men really insane do not recognize their insanity, and hence do not conceal it. The chief and leading character of melancholia is delusion, and not depression; depression is only a bodily indication (further on, witness says that depression is an affection of the mind considered distinct from the brain). "Dementia is the most unmistakable of all forms of insanity, there is complete loss of movement and loss of the mental faculties. In the change from melancholia to dementia, the patient loses his mind completely, until he becomes a complete animal without

[1] The autopsy demonstrating, as far as an autopsy can, the existence of traumatic insanity!!

any mind at all. That is the ordinary progress." Had never known or heard of insane persons transacting business, even of a routine character. Had never heard of insanity occurring thirty years after a blow. Had never seen the prisoner until he, the witness, took the stand. Did not think Hammond or Maudsley authority. Never knew a man to be sane before and after an act and insane during its performance, and would not call any work authority that laid it down so. The following colloquium occurred between cross-examining counsel and witness, after the latter made the preceding statement. *Q.*—Are you familar with Bucknill on Lunacy? *A.*—Bucknill and Tuke? Yes, sir, I have read the work; that is, *a smaller work on criminal responsibility*. *Q.*—Yes, the other is Bucknill and Tuke. *A.*—Yes, sir, the larger work. *Q.*—What do you say as to whether any one of these authorities do lay down that to be the case? *A.*—I think the authorities that have written recently don't lay it down, *those who did lay it down have changed their views.* A further colloquy resulted in a curious contradiction. *Q.*—Take a sane man, who, in a paroxysm, does a violent act, and brings into operation the utmost of his physical power, isn't there relaxation following? *A.*—Yes, but the mind has a good deal to do with it in that case; *it wouldn't have in the insane.* *Q.*—Do not the books report violent action of insane persons where the force is spent in the act itself? *A.*—Yes, some books. *Q.*—Do you remember now what authorities do that? *A.*—*I should think Maudsley and Hammond very apt to.* *Q.*—Do you know whether they do? *A.*—I haven't read either of them very carefully. *Q.*—Do you know whether Wagner does? *A.*—I do not know the book at all. *Q.*—Do you know whether Blandford does? *A.*—Yes, I presume he does speak of certain cases. *Q.*—Do you know whether he does or not? *A.*—My impression is that he does. I couldn't say very positively. *Q.*—Don't you know Wagner's Manual of General Pathology.[1] *A.*—I haven't read it, sir. *Q.*—You don't know anything about that work? *A.*—No, sir. *Q.*—Have you read Blandford through? *A.*—Yes, sir. *Q.*—You don't remember what he says upon that point? *A.*—I don't remember exactly; my impression is that he does say so. *Q.*—Are you sure that Bucknill does not? *A.*—No, sir; I think *it is very generally mentioned in works on insanity.*

It appears, then, that after stating in a manner reflecting on the judgment of Hammond and Maudsley, pre-

[1] This question and a previous one were probably asked to test the knowledge of general medical literature.

viously asserted to be unsound writers, that these authors were "apt to" mention certain cases, thus implying that such cases were fictitious, the witness was compelled, whether on the strength of actual recollection or in order to cut short further researches of counsel into his literary attainments, to admit that all authorities mentioned such cases. It need not be here stated that, with regard to the special case of Grappotte, this kind of cross-examination was irrelevant, although it appears to have been pertinent with a view to determining the qualifications of the witness whose novel opinions are here cited. Whatever may be said of the value of the results obtained in this cross-examination (and I believe it cannot be disputed), yet the suicide of the prisoner, so flippantly pronounced a *sham* lunatic by a physician, and the resulting post-mortem with its record of extensive meningitis, deformity of the skull, degenerative vascular and tissue changes in the brain, constitute the most crushing *dementi* which such "expert" evidence has ever received. Must not the question be continually revolving in the brain of that expert, if this mechanism ever operates in that direction, whether the prisoner did not also feign the indubitable signs of gross brain disease found after his death?

But enough of this picture, reflecting as it does so little credit on that branch of our profession to which it would seem the insane would first look as their natural guardians. How does it contrast with another, where one of the best legal minds in our land appears, consciously or unconsciously, as the boldest and best advocate of medical truth, and where that truth was fortified by incontrovertible evidence obtained by an examination after death?

In 1845, a most shocking tragedy occurred in the central part of this State. Nearly a whole family, consisting of Mr. John G. Van Nest, a wealthy and highly respectable farmer, his wife, then pregnant, a child sleeping in bed, and the mother-in-law of Mr.

Van Nest were murdered, while a hired man, who came to the defence of the family, was severely injured and left for dead. The murderer, a negro named Freeman, who had carefully prepared his weapons, took a horse, rode a few miles, and stabbed the animal when it was incapable of travelling, stole another horse, went thirty miles further, and was arrested, brought back to the scene of the crime, confronted with the witnesses, and not only did not deny the crime, but confessed it with frequent and irrepressible fits of laughter. With difficulty was the populace prevented from tearing him to pieces on the spot, and from subsequently forcing entrance to the jail. The murderer was arraigned on four indictments for murder; when asked to plead guilty to the first indictment, he replied: "Yes!" "No!" "I don't know!" When found guilty, as he was by the jury, the Judge directed the prisoner, who was somewhat deaf, to be brought to his side upon the bench, and said to him: "The jury say you are guilty; do you hear me?" PRISONER. — Yes. JUDGE.—The jury say you are guilty; do you understand? PRISONER.—No. JUDGE.—Do you know which the jury are? PRISONER.—No. JUDGE.—Well, they are those gentlemen down there, and they say you are guilty; do you understand? PRISONER.—No. JUDGE.—They say you killed Van Nest; do you understand that? PRISONER.—Yes. JUDGE.—Did you kill Van Nest? PRISONER.—Yes. JUDGE.—I am going to pronounce sentence upon you; do you understand that? PRISONER.—No. JUDGE.—I am going to sentence you to be hanged; do you understand that? PRISONER.—No. The judge passed sentence of death in the shape of an address read to the audience, thus tacitly admitting what was evident to every person in the immense multitude present that Freeman knew not a word he uttered or the strange scene thus transpiring. He was conveyed to his cell as unconscious of the sentence pronounced upon him as an unborn child. A second trial was granted, and the same judge who had first sentenced him and then refused a stay of proceedings, pronounced the prisoner incompetent for another trial, and refused to proceed. A few weeks later, the murderer died in jail, and a post-mortem examination revealed gross wasting and other disease of the brain.

As none of the usual motives for crime appeared on the part of the murderer, it had been rumored that he had been present at the trial of another murderer, and had learned from the argument of one of the counsel that in-

sanity was a ground for avoiding responsibility for crime. The public feeling ran high against the chief counsel in that trial, threats of personal violence to him were openly made; his law-partners, in his absence, felt themselves compelled to assure the public that their associate would not defend Freeman, and public tranquillity was restored, because now it was believed that no advocate could be found to give his services to so odious a cause. But, on his return, the lawyer in question, at the solicitation of three intelligent and humane citizens of Auburn, examined Freeman in jail, and he made up his mind that, whatever was Freeman's state of mind at the time of the homicide, it was then in a state of abject dementia. At the trial, the excited multitude in the court-room were not backward in loudly propounding the inquiry: "Who will dare come forward in defence of this negro?" "Let us see the man who will dare raise his voice in his behalf?" It was generally believed that counsel would have to be assigned by the Court, and that some junior member of the bar would be selected, but it was doubtful whether any one could be found with sufficient nerve to accept the appointment, and attempt even a weak and formal defence. It was after the queries above enumerated as to whether Freeman had counsel, when the Court inquired, "Will any one defend this man?" that amid the death-like stillness pervading the court-room, there stepped forward, no young fledgling with nothing to lose and all to gain, no reckless adventurer or desperate gambler at law, but one who had been Governor of the Empire State, its most prominent and courted lawyer, who afterwards became one of the chief lights of the Senate, the rival of Webster and Calhoun, and later still, the Secretary of State of this land at the most critical period of its existence. Repudiated by his party, in the face of the entreaties of his friends, and the threatening demonstrations in the

court-room, he rose, on behalf of the prisoner at the bar, and made so eloquent and philosophical a vindication of the teachings of mental science that it would to-day put to the blush some of those whom mental science has a better right to claim as votaries. That man was WILLIAM H. SEWARD, and one of the brightest leaves in his chaplet is his vindication by the post-mortem report on the insane negro's brain. It is a brief record, at least in the shape in which I have had access to it, but it is certified to by the six leading physicians of Auburn that Freeman's brain was the seat of disease truly remarkable in its extent.[1]

Although the post-mortem test of insanity can only be utilized in certain classes of cases with any prospect of obtaining results of a positive nature, yet, in view of such revelations as have been furnished by the occasional examination of the brains of criminals[2] and suicides, it seems desirable that such examinations should be more regularly made. There are a number of problems of equal interest to the lawyer, the physician, and the sociologist, not indicated within the limits of this paper, which await a solution; and there is every reason to believe that the methodical analysis of the criminal insane and suspected insane brain will contribute to such solution in no slight degree.

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[1] This and the other facts relating to the Freeman case were obtained from the biographical introduction to the works of Wm. H. Seward by George E. Baker.

[2] The conclusions of Benedict are not sufficiently well based to justify a consideration of them.

A CONTRIBUTION TO THE PATHOLOGICAL ANATOMY OF LEAD PARALYSIS.

BY

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As it is seldom that we have an opportunity to secure an autopsy in cases of lead paralysis, and so few of those made have included an examination of the central nervous system, I feel warranted in presenting the following history of a case, which, though far from being as complete as could be desired, is of sufficient value to be placed on record.

History.—A male, æt. 35, a carriage painter for twenty years, had his first attack of colic in 1871, being sick for three months, during which time he had very marked tremor. One year later, he had a second attack of colic, of four weeks' duration, without paralysis. In 1878, a third attack of colic, of six weeks' duration, supervened with paralysis of the extensors of the wrist and fingers, gradual in its onset, accompanied by pains in the feet and legs so severe that he was unable to walk; also with pain on micturition. Partial recovery followed, slight paresis remaining, and the continuance of the pain to a slight degree. Three months before death (July, 1881), a new attack of paralysis of the extensors of the fingers and wrist occurred, being very slight in the thumbs and index fingers; there were also some dragging of the toes, severe burning pain

in soles of the feet, slight numbness in the fingers, and more or less vertigo, but no colic; no headache.

He had been addicted to the excessive use of alcoholic drinks since youth (of late years only at long intervals): during last illness drank excessively to obtain relief from pain. Occasional epileptiform attacks had occurred since childhood; at times having been six years without an attack, but intervals of six months or a year were more frequent. He had a habit of talking to himself, and at times imagined that he would become insane, but no signs of mental impairment were observed, and his memory was excellent.

The patient was first seen by me at the Department for Nervous Diseases of the Manhattan Eye and Ear Hospital, in July, 1881; he was suffering such intense pain at the time that he was sent home at once without, unfortunately, any electrical examination having been made. He was more comfortable on the next day, but the day following he suddenly fell to the floor unconscious, and remained in a comatose condition for about three hours, when he died without convulsive movements. The autopsy, which was secured with great difficulty, was made twelve hours after death, by my friend, Dr. R. W. Amidon and myself, under such unfavorable circumstances, however, that it was far from being complete. Nothing remarkable was found on examination of the cranial contents, except a decided fulness of the veins. The spinal cord also appeared normal to the naked eye. Specimens of the affected muscles and the corresponding nerves were not secured unfortunately. The intestines appeared normal. The kidneys were small, their capsules adherent, the cortical layer thinner and paler than normal, and in the pelvis of the left kidney was found a small cyst, the size of a hazel-nut, containing a clear fluid. The muscular system was remarkably well developed, even the affected muscles showing but little

atrophy. The brain and 22 cm. of the spinal cord were placed in a solution of potassium bichromate. The former did not harden well, as the weather was hot; portions, however, were saved.

Microscopical examination of sections stained in carmine, and treated according to Clark's method:—The cerebral cortex exhibited a slight increase in capillary vascularity; the walls of the small vessels were thicker than normal; the perivascular spaces dilated to some extent, containing lymphoid elements to a moderate degree. The nerve-cells did not present an abnormal appearance; though dilated pericellular spaces were seen, some containing lymphoid elements. Amyloid bodies were found, and the same vascular changes and slight increase in the number of lymphoid elements in nearly all parts of the brain, including the optic tract and commissure, the latter not exhibiting any degenerated fibres, however. Vessels with thickened walls, distended perivascular spaces, and capillary hemorrhages, to a slight extent, were found in the floor of the fourth ventricle. These changes were most marked, however, from the decussation of the pyramids to the middle of the cervical enlargement, below which point they gradually became less decided. With exception of the changes mentioned, the pons and medulla appeared normal. The alterations in the vessels were most decided in that part of the cord which is normally most vascular, namely, the central gray column, and respecting the height in the cord, at about four cm. below the decussation of the pyramids. At about this region, for a height of nearly two cm., hardening did not take place perfectly in the centre of the cord. It was first regarded as a spot of simple post-mortem softening, but as softening occurred only in this region, where the most decided anatomical changes were found, the increased vascularity and fluidity of this portion probably rendered

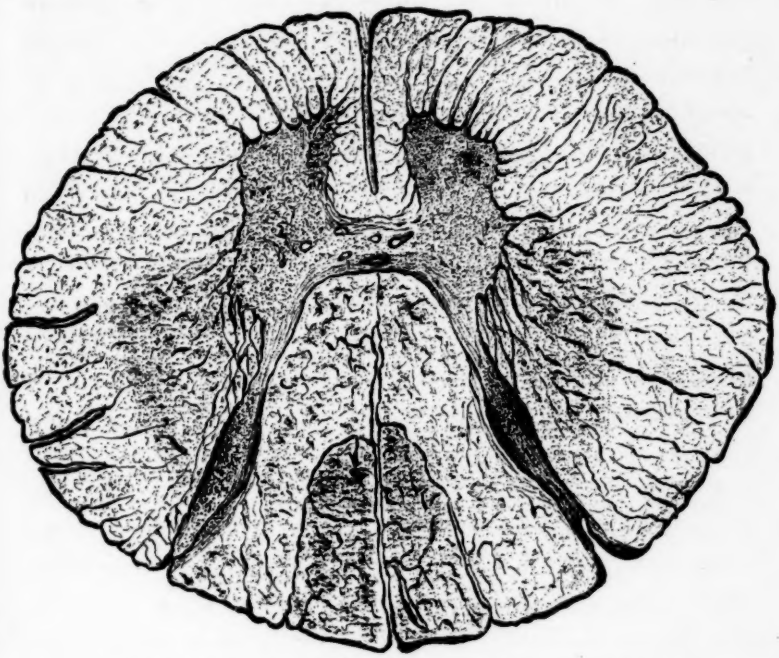

FIG. 1.—Transverse section of cord in the superior cervical region.

FIG. 2.—Section of anterior horn in the same region more highly magnified.

it more liable to undergo post-mortem changes than the less affected portions. The gray matter in this region presented, besides the increased vascularity, many amyloid bodies and an increase in lymphoid elements. Deiters' cells were not abnormally frequent. The nerve-cells of the anterior horns were remarkably well developed in size and number, and a long and careful study of the various cell-groups at different heights of the cervical enenlargement failed to exhibit changes decided enough to warrant the statement that any one group or column of cells were alone affected. The nearest approach to such a condition was found in the outer one of the two peripheric cell-groups in the upper cervical region, at the inner borders of which many of the cells were small and indistinct, and might be considered atrophied or shrunken. A similar appearance, but to a less degree, was found in other cell-groups. The fact that large cells are interspersed with small ones, and that the same column of cells will vary in number and size at successive levels, renders it extremely difficult to conclude, when the changes are not very decided, whether we have a normal or an abnormal condition. It was only the small cells which presented the opposite of these conditions, this being most decided in the neighborhood of dilated vessels or small hemorrhages. The nerve-fibres in the gray matter did not present any decided changes, nor was any decided degeneration positively determined in the anterior roots of the cervical nerves, although increase in the neuroglia along the root-bundles, and in some cases the vascular changes described along their course, would exclude a perfectly normal state. Where the root-bundles were broad, numerous lymphoid bodies were seen between the fibres, and this was particularly well marked in the posterior roots of the cervical region. The white columns presented some thickening of the septa near the gray matter.

The *processus reticularis* and the columns of Goll exhibited a slight degree of sclerosis in excess of the normally greater density of these portions.

Before reviewing the facts in this case, a summary of the results of previous examinations in cases of lead paralysis will prove interesting.

We will exclude the twenty-one cases collected by Tanquerel des Planches[1] in which examinations of the brain were made, also other observations of the older writers which were unaccompanied by a microscopical examination. Nor shall we recite the numerous accounts of examinations of the muscles and nerves, which confirmed the fact that the changes were those of a more or less marked degeneration of the muscle and nerve elements, and their accessory connective-tissue elements, similar to those found after nerve-injury, and after poliomyelitis anterior, more particularly, however, in progressive muscular atrophy, the alterations usually not being very decided. Although the most marked neural changes were found in the intramuscular nerves, yet alterations were also found in the nerve-trunks, and Dejerine[2] traced these changes up to and into the anterior roots. He reported five cases, in three of which parenchymatous neuritis was found in the anterior roots.

Kussmaul and Mayer[3] found, in a case of lead colic, sclerosis of the cortex and superior cervical ganglia, increase of connective tissue, and deformity of the cells; a slight degree of periarteritis was found in the brain and cord, as well as changes in the mucous and muscular coats of the stomach and intestines.

Lancereaux[4] found in two cases atrophic changes in branches of the musculo-spiral nerve, but no change in the nerve-roots, or in the cord. In a third case, however, the patient, æt. 37, had been affected with paralysis of the extensor group of the forearm for ten years, also with

arthralgia and epilepsy; and died from renal cirrhosis. The cord at the cervical enlargement was softer than normal; a number of the ganglion-cells were atrophied or more granular than normal; two roots on the right side above the cervical enlargement were atrophied.

Gombault[5] found no changes either in the brain or cord of a painter with a contracted kidney. The musculo-spiral nerve exhibited changes in the medullary layer and in the connective-tissue elements, but the axis cylinders were preserved.

In Bernhardt's[6] case, in which Westphal[7] made the microscopical examination of the spinal cord with negative results, while he found what he considered degeneration of nerve-fibres in the musculo-spiral nerve, namely: bundles of non-medullated nerves; the patient had been affected with lead paralysis for two years. According to Bernhardt, the spinal dura was covered with spots and streaks, and in the pia of the posterior surface of the lumbar enlargement, calcareous granules were found. He considered the cord smaller and thinner than normal, and reported a variation in the size of the anterior horns in the dorsal region, which was not confirmed by Westphal. The cerebral pia was opaque and œdematous; the vessels were thickened and calcified to some extent.

Tiburtius[8] also arrived at negative results in the examination of the spinal cord in a case of lead paralysis and epilepsy. Changes were found in the muscles, and atrophic changes in the small muscular branches, often extensive. It was claimed that healthy nerves present the same picture which Westphal described.

Vulpian[9] found, in case of lead paralysis of the extensors of the fingers, that the muscles and peripheral nerves were altered, and in the roots of the nerves in the cervical enlargement instances of sclerosis. Some of the cells contained vitreous colloid bodies, and others being of the amy-

loid type. It may be mentioned here, also, that in a dog poisoned by Vulpian with plumbic acetate, in small quantities administered for a considerable time, during which the posterior muscles were first affected, then the anterior, death following; the changes found consisted of subacute myelitis in different regions; nerve-cells were seen in process of destruction, altered nerve-fibres, and great numbers of granular bodies.

[Kast[20] believes that the paralysis which Mason[21] induced in frogs with plumbic acetate was due to the acetic acid, and not to the lead, as controlling experiments with plumbic chloride gave negative results.]

Friedländer[10] reported a case in which there were several attacks of colic and paralysis of the extensor group of the forearm, with absence of electrical excitability during the last attack, which resulted in death from gradual exhaustion. The cord exhibited no changes; except a certain softness, particularly in the cervical region, and a little plate of bone in the arachnoid; great numbers of slender nerve-fibres were found, particularly in the posterior nerve-root; degenerative changes in the muscles and corresponding nerves, and to a less degree in the musculo-spiral nerve.

A case has been reported by Gueneau de Mussy and Lemaire[11] of several attacks of lead colic and paralysis, terminating in convulsions and death, in which a large hemorrhage into the left ventricle was found, and Bramwell[12] reports an autopsy on a worker in lead in which thickening of the frontal bone was found and meningitis principally on the convexity of the cerebrum. It is probable that the lesions found were specific, as the patient had had syphilis.

Eisenlohr[13] reports a case in which the muscles were affected in very different degrees of intensity; those presenting the most decided changes possessing still a recog-

nizable transverse striation in many portions. Accumulations of fat existed at places in the connective tissue, which formed the principal substance. In other muscles, the fibres were partly reduced in size, punctated, moderately pigmented, and the nuclei increased in volume to a marked degree.

In the large nerve-trunks were many exceedingly slender nerve-fibres, a number of which had lost their medullary sheaths. The connective tissue was increased. Neither on the anterior nor posterior roots, nor in the spinal cord, were pathological changes to be found. The author favors the view of a primary lesion of the motor nerves.

Zunker[14] has published the following interesting case. A painter, æt. 36, had had colic ten times from 1865 to 1873, then paralysis of the extensors of the fingers and of the thumb muscles; recovery followed, then a return of the difficulty, again followed by recovery. In 1876, he had colic, complete paralysis of the hands, muscular atrophy in the forearms and hands, paresis of the legs, together with tearing pains, resulting in sufficient improvement for resuming work. In 1878, the paralysis appeared again, at which time an examination revealed paralysis in both forearms, of the musculo-spiral group, excepting the supinators, with atrophy, particularly on the left where even the supinators were slightly involved. The hand remained in a position of decided flexion, the muscles of the thenar and hypothenar groups and the interossei were paralyzed and considerably atrophied. The lower extremities were of diminished size, particularly the extensors. Paralysis of the left extensor digitorum and peronei existed, and on the right paresis of the same. A slight vago-equinus position was present on both sides. No perceptible sensory disturbances were observed. The extensors and hand muscles on both sides failed to react either to

faradism or galvanism, also the extensors and peronei of the left lower extremity; those of the right side showed qualitative changes.

Autopsy: On section of the fresh spinal cord were found clear rounded flakes without recognizable structure in the lateral and anterior columns, particularly near the gray matter.

The whole muscular system, excepting the supinators, presented a pale reddish-brown color. The extensors of the forearm exhibited a firm tendinous tissue, with narrow lines of yellowish-red muscular substance, most marked on the left. In the legs the atrophy was less.

Microscopical examination:—The peroneal nerve exhibited a large quantity of wavy connective tissue, numerous degenerated nerve-fibres. The musculo-spiral, at the point of alteration, exhibited, particularly the left, a great number of degenerated fibres, the greater portion, however, remaining intact; the connective tissue being more scanty than in the peroneus. In both nerves multiplication of the nuclei had taken place. Section of the triceps showed marked degenerative neuritis. The vessels of the nerves possessed very thick walls. At the middle of the forearm, the median and ulnar nerves exhibited a slight increase in the number of nuclei. The extensors of the fingers appeared transformed into a tendinous connective tissue, exhibiting an interstitial fatty accumulation, with here and there collections of cells, the remains of contractile substance. The remaining muscles present changes of a less decided character—namely, a myositis.

The spinal nerve-roots were small, possessed numerous amyloid bodies, but otherwise normal. In the pons, medulla, and cord were numerous amyloid bodies. The flakes described above, stained with hæmatoxylin, osmic acid, and Brunswick brown, but not with carmine. In the lower cervical portion, a line of sclerosis, 3 mm. long,

the size of a pin point, was seen. The anterior horns were reduced in size in their median portions, atrophied, and possessed many amyloid bodies.

The atrophy was most marked from the middle of the dorsal region nearly to the lumbar enlargement. The left anterior horn was transparent, consisting of fine fibres, the ganglion-cells being smaller than on the opposite side, and sometimes failing entirely for long distances. The cells of the lateral horns and of Clark's column were intact. The ganglion-cells of the cervical and lumbar enlargement were not appreciably diminished in number, but of smaller size than normal, as if shrunken; most of them being small and compact. The intra-spinal portions of the anterior root were reduced in size only in the region of the atrophic left anterior horn.

Zunker emphasizes the improbability of the view that the changes extend from the centre to the periphery. The absence of the circumscribed local changes in the cervical and lumbar enlargements, the presence of such changes as compared with those found in the atrophic spina. paralyses in a region the corresponding muscles of which do not seem to have been affected by lead paralysis, leads him to the view that the muscular system and the nerves become affected independently about the same time; other organs, including the spinal cord, becoming involved as the disease becomes general (*Jahresb.*, 1880, 2d Bd., I. Abth., S. 89).

The following is an abstract of Monakow's[11] case:

Male, æt. 56, a painter for forty years, the father of five children, who all died in youth in convulsions; has had repeated attacks of lead colic. Ten years ago had paralysis of the extensors of the right hand, which involved, two years ago, the muscles of the thenar eminence; since then has exhibited signs of psychical impairment of the type of dementia paralytica. Examination reveals blue

line of gums, paresis of the oral portion of the left facial nerve, completely expanded pulse; paresis of the right arm, slight flattening of the right deltoid; disappearance of the right thenar eminence and the extensors of the right forearm; walk slow and difficult; speech slow; articulation indistinct and imperfect; left hemi-analgesia; psychical feebleness. In the later course of the disease, development of exaggerated ideas and maniacal excitement.

Autopsy:—Pachymeningitis externa; hydrocephalus externa; lepto-meningitis chronica, without cortical adherence; atrophy of frontal and central convolutions; hydrocephalus chronica interna; ependymitis chronica. Spinal cord, especially the cervical portion, remarkably small and of less than normal consistence.

Microscopical Examination:—In extensor digitorum communis, in places, normal primitive fibres, with considerable increase in nuclei; others, small, brittle, transversely divided; still others exhibiting fatty degeneration and a moderate growth of connective and fatty tissue. The branches of the musculo-spiral nerve supplying the extensors exhibit only a few normal fibres, the medullary substances showing granular disintegration, the axis cylinder frequently lying free or in wavy connective tissue, rich in cells; in the trunk of the nerve most of the fibres being well preserved. The nearer the cord, the less the changes. The examination of teased preparations of the cervical cord reveals numerous corpora amylacea, decided pigmentation of the ganglion-cells. The hardening of the specimen was not complete. At the level of the sixth cervical vertebra the right anterior horn is reduced one-third; the number of the ganglion-cells diminished, some of them very small, strongly pigmented, and having slender winding processes. The anterior horn exhibits two spaces filled with fine fibrillæ only; somewhat lower, in the region of the middle cell-groups, are numerous spider-

cells and several atrophic ganglion-cells. The anterior group of cells is also atrophic. In the left anterior horn similar atrophic conditions are present. At the level of the eighth nerve, numerous small hemorrhages, vessels with thickened walls rich in nuclei, here and there aneurismal dilatations. At the seventh cervical nerve are spots of disseminated sclerosis, partly located in the posterior horn. The white substance exhibits marked growths of the neuroglia, and here and there patches of sclerosis. The dorsal region of cord is normal. In the lumbar. enlargement, small hemorrhages and a few atrophic cells exist. The brain, examined fresh, shows dilated perivascular spaces, filled with lymph-cells, granular corpuscles, and aggregations of pigment, the ganglion-cells being strongly pigmented. Sections from the atrophied convolutions show thinning of the cortex, many free nuclei, and numerous spider-cells; the majority of the ganglion-cells being atrophied. In the white substance are miliary hemorrhages. There is considerable atrophy of the trigeminal nucleus, to a moderate degree of the acoustic, the glosso-pharyngeal, the vagus, and the accessory nucleus; and the hypoglossal nucleus is almost completely atrophied.

Monakow considers the disease due to lead poisoning. The cerebral changes, he points out, are almost identical with those of progressive paralysis of the insane (*Jahresb.*, 1880, 2d Bd., I. Abt., p. 89).

Dr. S. Moritz,[19] of Manchester, England, reported a case of a glass founder, who died from uræmia six weeks after an attack of paralysis of the extensors of the forearm. The extension of the right hand was impossible, while the left side was less affected. "The muscles were somewhat soft and flabby, but did not appear particularly wasted."

On microscopical examination by Drs. Dreschfield and

Young, the kidney showed a chronic interstitial nephritis. The cervical cord showed no abnormalities whatever; but in the musculo-spiral nerve degenerative changes were found, and the muscles exhibited changes similar to those found by Friedreich in progressive muscular atrophy. The author favors the view that the changes in the muscles were secondary to those in the nerves. The case is well reported. Monakow's and Moritz's papers give the most complete reviews of the subject that have appeared.

In addition to these cases, which are all I have been able to find in the literature of the subject at my command of examination of the spinal cord in lead paralysis, I am informed by my friend, Dr. E. C. Seguin, that in 1874 he reported at the Society of Neurology and Electricity the results of a microscopical examination of the spinal cord, the nerves, and muscles in a case which had partially recovered from lead paralysis of the extensor group of the forearm. He found, aside from slight changes in the muscles and nerves, a slight reduction in the size and number of the cells of the anterior horns in the cervical region, with occasional signs of degeneration in certain cells. From the specimens which he kindly loaned me for examination, I was able to confirm his statements, but the changes were too slight, as in my own case, to localize the lesion positively in any one group of cells. This case has never been published that I can ascertain.

The complications with other diseased conditions, in some of the cases presented, raises the question whether the lesion found might not have been due to other causes than chronic lead poisoning; and my own case is open to the same objection, as the lesions found resemble those observed in cases of epilepsy and of chronic alcoholism to a considerable extent. The predominance, however, of the alterations described in the cervical cord at the origin of the nerves supplied to the affected muscles argues against

this view. We think we are justified in concluding that a mild grade of subacute myelitis existed in this case, not sufficiently marked to show very decided changes in the nerve-cells, but which might still be sufficient to impair their functions.

Out of the fourteen cases here mentioned, in which the spinal cord was examined, in six of them (Lancereaux, Vulpian, Zunker, Monakow, Seguin, Birdsall) changes were found to a greater or less degree, and changes similar in character. Such a large percentage of positive cases outweighs the negative ones in favor of involvement of the cord in lead paralysis, but it does not settle the question whether the cord is primarily, secondarily, or simultaneously involved in relation to the muscles and peripheral nerves. The fact that changes have been noticed in the muscles and muscular nerve branches before they could be detected in the cord is not a conclusive argument against the theory of a central origin of the changes. Impairment of function in the spinal centres is more liable to affect the nutrition of centrifugal nerves and organs than the latter are to react upon the former, as long as Waller's law holds true.

The chemical experiments which show that the spinal cord retains relatively more lead than any other of the parts except the bones,[17] are in favor of a central origin of the disease, as are also the clinical facts when compared with clinically allied diseases known to be associated with anatomical alterations in the cord. As it is not the purpose of this article to discuss at length the pathology of lead paralysis, but to summarize the pathological findings, we must conclude with the statement that many more cases are required to decide this question positively, and to settle the theoretical questions first thoroughly agitated by Remak,[18] concerning the localization of functions in

different heights and different cell-groups of the cord, the material which we now have is of but little avail.

The renal lesions found in our case were evidently the cause of death, as they have been in so many other cases —a fact to which Lancereaux[19] in particular has called attention. Although requested, a specimen of the urine was not obtained before his death, and an unpleasant interference at the autopsy resulted in our not securing the kidneys for microscopical examination. The lesions were evident to the naked eye, however. While the attack, which resulted in his death, was probably uræmic, the epileptic attacks, to which he had been occasionally subject, began in infancy, hence could not have been the result of chronic lead poisoning; the latter factor may have proved an exciting cause, however.

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INSANITY FROM TRAUMATISM.

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My attention has been recently directed to the interesting subject of traumatic insanity through the study of a case in which its existence was alleged. It was that of a suicide, and the determination of the question of his sanity or insanity was of forensic bearing, inasmuch as certain pecuniary results and the according of cemetery privileges and religious rites depended on the answer to this question.

The causation of insanity by traumatism has received considerable attention from alienists. Thus SCHLAGER[1] has found that of five hundred cases of insanity, forty-nine resulted from injuries to the skull. In twenty-one of these, the injury was followed by immediate loss of consciousness, in sixteen by simple mental confusion and wandering of the thoughts, in sixteen by dull pain in the head. In nineteen cases, the disease, insanity, commenced within one year after the accident; the other cases after an interval of from four to ten years after the accident. Generally the patients manifested from the time of the injury a tendency to cerebral congestion, after the ingestion of even a small amount of spirits or mental excitement. In several cases, ocular hyperæsthesia and even amblyopia made its appearance. In fifteen cases, there appeared, shortly before and during the existence of the cerebral disorder, scotomic

[1] Zeitschrift der K. K. Gesellschaft der Aerzte zu Wien, xiii., 1857, p. 434.

dots, which exerted a deciding influence on the character of the delirium. The patient often experienced ringing and noises in the ear. In eighteen cases, there was dulness of hearing; in three, abnormal subjective perceptions of smell, and changes in the pupils. Frequently the character and disposition changed. In twenty cases, great irascibility and an angry, passionate manner, even to the most violent outbursts of temper, was remarked. Sometimes, but far less frequently, there occurred over-estimation of self, prodigality, restlessness, and disquietude. In fourteen cases, there were attempts at suicide, and frequent loss of memory and confusion. The prognosis in all was unfavorable; seven became progressively paretic.

MARCE[1] claims that, in the majority of cases of insanity produced by injury to the skull, the disease assumes an ill-defined form, offering irregular alternations of stupor, agitation, and imperfect lucidity without systemized delirious ideas; the patient becomes progressively demented. KRAFFT-EBING[2] classifies insanity from traumatism according as it is due (1) to the accident directly or (2) is manifested later. The prodromata are disordered motor or sensory phenomena, and change of character; in a third group the insane outbreak is preceded by a latent susceptibility, determined by the injury, which may be considered as an acquired predisposition as it were, and which only requires an exciting cause to develop into actual insanity. SKAE,[3] the originator of the term "traumatic insanity," after an analysis of numerous cases, arrived at the following conclusions. "First.—Traumatic insanity is generally characterized at the commencement by maniacal excitement, varying in intensity and character. Second.—The excitement is succeeded by a chronic condition, often lasting many years, when the patient is irri-

[1] Maladies mentales.
[2] Lehrbuch der Psychiatrie.
[3] Bucknill and Tuke, Psychological Medicine.

table, suspicious, and dangerous to others. Third.—In many such cases distinct homicidal impulses exist. Fourth.—The characteristic delusions of this form of insanity are those of pride, self-esteem, and suspicion, melancholia being but rarely present. Fifth.—This form is rarely recovered from, and has tendency to pass into dementia and terminate fatally by brain disease."

KIERNAN[1] summarizes the results of an observation of forty-five cases, thus:

First, traumatism produces certain psychoses. Second, the majority of these are unaccompanied by epilepsy. Third, the majority have a tendency to end in progressive paresis. Fourth, a large proportion are accompanied by depressing delusions. Fifth, the majority of these latter do not exhibit any hereditary taint. Sixth, with certain modifications, Krafft-Ebing's conclusions respecting the traumatic psychoses are correct. Seventh, injuries received before the age of forty are probably of more effect in producing insanity than those received subsequently. Eighth, slight injuries, from the insidious nature of the changes they set up, are as much to be dreaded, if not more, than the grave injuries. Ninth, traumatic causes do not have as much influence in the production of insanity as intimated by Schläger, he finding that over eight per cent of the cases were caused by traumatism, while at the New York City Asylum for the Insane but two per cent were so caused. Tenth, that certain cases of insanity caused by traumatism have well-marked systemized delusions. Eleventh, that in all cases of insanity caused by traumatism a guarded prognosis should be given.

The above citations will serve to indicate the present position of alienists with regard to the question of traumatic insanity. I will now proceed to relate the history of my own case.

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[1] Journal of Nervous and Mental Diseases. July, 1881.

F. K——, æt. fifty, rope-maker, married, born in Bavaria, was of moderate height, as a rule enjoyed good health up to the time of the injury to be mentioned. His maternal grandmother had been the subject of periodical insanity; one of her sons was insane, his insanity being of the same type. K—— has always been industrious and was somewhat penurious, drank beer, but rarely spirits, as the latter affected him profoundly, and he was seldom, if ever, intoxicated; his other habits were regular; it was noted that he was very careful about his personal appearance. On coming to Chicago, he was unable to find work at his trade and went to work on the railroads. On the third of December, 1878, while the patient was handling a crate of crockery in a freight car, an engine struck the latter with great force, throwing K—— to the floor, his head striking an empty truck. His foot and ankle were injured at the same time. There was no external evidence of injury to the skull, but pain and a sensation of heat were from this time on experienced on the side of the head opposite to the one where it had alighted on the truck. These symptoms showed considerable variation. Shortly after, the patient became gradually neglectful of his personal appearance, disinclined to work, his sexual appetite became inordinately developed, hitherto select and guarded in his language, he now became vulgar and profane, and he also began to indulge frequently in drink. Tinnitus aurium was complained of from time to time, and hallucinations of hearing were occasionally experienced. These were very disagreeable in character, and the patient was much annoyed that he frequently failed to distinguish what the (hallucinated) voices were saying of him. Towards the latter months of his life the ordinarily reserved patient became loquacious and declaimed much about going into business and making considerable profits.

December 24th, 1881.—While under the influence of liquor, he struck his wife a violent blow on the epigastric region, and to restrain his violence he was tied down and allowed to remain so till morning. He afterwards expressed great indignation at the way in which he was treated, and threatened to kill his wife. At this time he was sober. On the morning of the 26th he committed suicide by hanging. The autopsy revealed extensive adhesions of the dura to the skull and the pia, with adhesions of the latter to the cortex cerebri in patches on the right side. The Pacchionian bodies were unusually numerous, and well developed, one had absorbed the bone to the extent of perforating the cranium. The brain structure itself appeared normal, with the ex-

ception that it followed the pia, when the membranes were removed at the adherent spots.

Taking all the facts of this somewhat imperfectly observed case into consideration, I gave it as my opinion that the suicide was an insane act, and that K—— had been suffering from the initial stages of the form of insanity described by Schlager, Marcé, Skae, and the other writers cited, as "insanity from traumatism."

EDITORIAL NOTES AND COMMENTS.

NERVE-STRETCHING.

A new idea is on the wing. Its hardy flight can be marked through the journals from St. Petersburg and Vienna to St. Louis. Not to stretch a nerve nowadays is to argue one's self a neurological infidel; and it therefore becomes the part of a neurological journal to inquire whether the claims of this new belief are such as should appertain to a position of scientific orthodoxy.

As will be seen from the appended references, the bibliography of the subject is already very large, although the first case upon which the operation was done was of as recent a date as 1872. Nussbaum was the pioneer, notwithstanding that the credit of this premier rank has been generally given to Billroth, who really, as is pointed out by MM. Artaud and Gilson, only laid the nerve bare and did not attempt to stretch it. From among the literary masses there loom up prominently the monograph of Vogt, the summarizing article of Fenger and Lee, and the recent brochure by Nocht. The two latter publications have been of great service to us in our work of research, and yet we have been obliged to go over almost all the cases in the original journals, because the abstracts of them had omitted details that we regarded as essential to the validity of the testimony. For example, it has been very exceptional to have the time stated during which the patient was under observation after the oper-

ation, and wellnigh as exceptional to obtain any statement regarding the duration of the disease previous to the operation. A case of neuralgia of five months' duration is, in this manner, heralded as cured, but it is not mentioned that the patient was only under observation for eleven days after the nerve-stretching, and thus the immediate result, unchecked by a further history, obtains international transportation under false pretences. Or the nerve is both stretched and cut, or exsected, and yet the result is accredited to the stretching alone. We have found it necessary, too, to exclude certain cases of the German surgeon Langenbuch—whose name, by-the-by, has not yet ended its travels under the blundering metamorphosis of von Langenbeck—viz.: those of locomotor ataxia, because the testimony regarding the effect of the operations done by this gentleman has been so exceedingly discrepant, as will be seen by the report, on another page, of a late debate at the Berlin Medical Society. We have, for these and other reasons, been obliged to closely examine all cases published in accessible publications. We have endeavored to analyze closely, and have admitted to our tables none wherein the facts have not been stated either conclusively or sufficiently for the purpose to which they were applied. But unless the cases were utterly useless, we have preferred to lay them before our readers, and exclude them publicly. The number of cases inaccessible to us has been small, and confined mainly to those published in foreign theses and inaugural dissertations.

We have collected twenty-five cases of nerve-stretching in sciatica, as follows (see Table I.):

Of these 25 cases there were 14 alleged cures, but we must exclude 4 of these, because the length of time is not stated during which the patient was under observation after the operation. In 6 great relief was claimed, but of

TABLE I.

OPERATOR.	DISEASE.	DURATION OF DISEASE.	PT'S AGE.	NERVE STRETCHED.	DURATION OF OBSERVATION	KIND OF HEALING.	RESULT.
1. Davidson	Sciatica.	5 yrs	62	One sciat.	3 mos.	Not stated.	Cure.
2. "	"	18 mos.	35	"	Not stated	"	"
3. "	"	4 yrs.	65	"	"	"	"
4. "	"	7 yrs.	31	Not stated.	"	"	Relief to pains and deformity of muscle.
5. Fenger.	"	5 mos.	45	Left sciatic.	About 1 mo.	1st intent	Relief; then death by general asthenia.
6. Maag.	"	18 mos	29	Right sciatic.	58 days.	Suppuration	Cure.
7. "	"	3 mos	19	Left "	54 days	"	Cure.
8. Chiene	"	5 years	40	Right "	22 days	1st intent.	Great relief.
9. "	"	about 11 mos	41	Left "	18 days.	Suppuration	Great relief.
10. Macfarlane	"	10 mos.	29	One sciat.	8 mos.		Cure.
11. Spence	"	Several months.		"	1 year.		Great relief.
12. Schutter	"	6 mos.	30	"	Several w'ks.		Death from pyæmia.
13. Hildebrandt	"	Not stated.	32	"	18 mos.		Cure.
14. Neuber	"			"			Disappearance of pains, but permanent (?) paralysis.
15. Naismith	"	7 yrs.	54	Not stated.	3 mos		Cure.
16. Ruprecht.	"	4 yrs	37	"	"		Pains and spasms gone, anæsthesia relieved by galvanism.
17. Patruban	"			One sciat	Not stated.	Not stated.	Cure.
18. Bell	"	3 mos			3 mos.		Great relief.
19. Pooley	"	4 yrs.		One sciat.	1 mo		Cure.
20. Bramwell	"	probably 5 weeks.			6 mos.		Cure.
21. "	"	Not stated.		One sciatic.	12 mos.		Great relief; relapse, yielding to medication.
22. "	"	"	20				Cure for 12 mos; then relapse; stretching, cure, 7 months.
23. "	"	about 20 mos	27		6 mos		Cure.
24. "	"	14 mos.	46	Left sciatic.	2 mos.		Cure.
25. Pye	"						Cessation of pains for a while, but anæsthesia, which passed off, and pains returned as before.

these one was only observed twenty-two days, another eighteen days, whilst in a third nothing is stated about this point; and this omission is the more flagrant when the previous duration of the disease is regarded in these patients, being respectively five years, eleven months, and seven years. We may, therefore, admit 10 cases of cure and 3 of great relief, making a percentage of 53. This is the more remarkable because of the previous duration of the sciatica in these successes, as the table shows. There were only 2 deaths, and one of them, Fenger's case, was obscure in its nature, and it was suspected that the pain was due to cancer of the pelvic bones. The other case died from pyæmia. In one case, the pains disappeared, but a permanent paralysis was left; in another, there was a temporary anæsthesia, which was, however, relieved by galvanism. There were two relapses, both occurring after twelve months, one cured by re-stretching (seven months subsequent medication), the other by internal medication. The longest subsequent observation was over a year. The ages ranged from 19 to 65.

This certainly speaks well for nerve-stretching in sciatica. What other remedy has done as much?

Table II. consists of cases of neuralgia due to traumata, or gross causes akin to traumata.

Of the ten alleged cures only six can be admitted as proven, the subsequent observation not being stated in two cases, and being inadequate in two more. Great relief in one, fair relief in one; either cure or relief, then, in 53 per cent. Failure in three cases, one made worse. The previous durations should be studied. Altogether, this is an excellent record for nerve-stretching in traumatic and traumatic-like neuralgias.

Table III. contains three cases of idiopathic neuralgia, in one due to neuritis. Two of these must be rejected, because in one the subsequent observation is not stated,

TABLE II.

OPERATOR.	DISEASE: TRAUMATIC NEURALGIA.	DURATION OF DISEASE.	PAT'S AGE	NERVE STRETCHED.	DURATION OF OBSERVATION.	KIND OF HEALING.	RESULT.
1. Vogt.....	Wound and neuralgia of forearm.	..	..	Ulnar.....	1 yr.....	....	Cure.
2. Callender.	Amputation at wrist; neural up from stump.	1 yr.....	20.....	Median, ulnar, and ext cutaneous.	1 mo.....	....	Cure.
3. Petersen	Pains in leg.....	1 mo.....	..	Tibial	1 mo.....	....	Cure.
4. Masing...	Sciatic from fall	..	..	Sciatic	..	....	Made worse.
5. Morton...	Injury to hand; radiating pains.	85 days.....	..	Ulnar.....	7 mos.....	Supp.....	Cure.
6. Estlander.	Neural., stiffness, and anæsthesia of forearm.	..	27.....	Median.....	24 h'rs....	1st intention....	Relief; then failure.
7. Spence ...	Onychia; great pain.....	7 yrs.....	..	Both digital.....	7 mos.....	....	Cure.
8 Credé ...	Ascending in arm.....	14 mos.....	..	Radial, ulnar, axillary cutaneous.	3½ w'ks..	....	Great relief.
9. Omboni...	Perilemitis axillary plexus	..	..	Axillary plexus....	..	....	Cure.
10. Schutter...	Panaritium; ulnar neural.	..	..	Ulnar..	..	....	Cure.
11. Van Kleef.	Mammary neural.....	5 mos.....	..	4th, 5th and 6th intercostals.	11 days...	1st intention....	Cure.
12. Czerny...	Ulnar neuritis...	2 yrs.....	24	Ulnar.....	14 days...	....	Relief fair.
13 Maag.....	Intermittent neural. and contraction.	Ab't 11 mos.	37.....	Median	..	Supp	Cure.
14. Esmarch.	Neural. of testicle after castration.	..	..	Ext. spermatic.....	..	. .	Failure.
15. Purdie....	Neural. after onychia....	7 yrs.....	..	....	7½ mos...	....	Cure.

and in the other it is only nine days in a disease of three years standing.

TABLE III.

	OPERATOR.	DISEASE.	DURATION OF DISEASE.	PATIENT'S AGE.	NERVE STRETCHED.	DURATION OF OBSERVATION.	KIND OF HEALING.	RESULT
1.	Hildebrandt ..	Neuritis ascendens in arms.	6 wks.	..	Brachial plexus	5 wks.	..	Cure.
2	V. Nussbaum..	Intercostal neuralgia.	20 yrs.	Elderly man.	8th, 9th, 10th intercostals	..	..	Entire relief for a short time, but relapse to old state.
3	Schüssler.....	Neural. occip. major.	53....	3 yrs..	Occipitalis major.	9 days.	1st intent.	Cure.

Table IV. contains eight cases of chronic trigeminal neuralgia.

It is claimed that all these were cured; but in only one case is there positive proof of this statement, viz., the one which was under observation for eight months after the stretching. Possibly a cure was obtained in the two other cases observed for about two months, but in one of these the previous duration is not stated, and in the other it was two years.

These tables sum up what we may term the functional neuralgias, in contradistinction to the graver ones which are to follow. There are fifty-one cases, with twenty positively proven cures, and five of relief, being in all, either cured or relieved, 49 per cent. There were only two deaths, both in sciatica, it being questionable whether one was due to the operation, and the other ensuing from pyemia, which may be fairly regarded as a preventable

TABLE IV.

OPERATOR.	DISEASE.	DURATION OF DISEASE.	PATIENT'S AGE.	NERVE STRETCHED.	DURATION OF OBSERVATION.	KIND OF HEALING.	RESULT.
1. Masing...	Neuralgia of frontal.	4 yrs....	60	Frontal..	..	Cure	..
2. Spence...	Superior maxillary.	4 yrs....	..	..	8 mos...	Cure	..
3. Walsham.	Infra-orbital.	10 yrs...	28	Infra-orbital.	29 days.	Erysipelas.	Cure.
4. Polaillon.	Supra and infra-orbital.	Not stat.	61	Trigeminus.	About 2 mos.	Not stat.	Cure.
5. Vogt.....	Infra-orbital.	6 wks...	..	Infra-orbital.	Not stat.	..	Cure.
6. Kocher...	Left supra-orbital.	12 yrs...	32	Left supra-orbital.	..	..	Cure; anæsthesia at first, gradually disappearing.
7. Higgens..	Supra and infra-orb.	2 yrs....	62	Infra and supra-orb.	About 2 mos.	..	Cure.
8. Higgens..	Supra-orbital.	About 1 year.	53	Supra-orbital.	About 3 weeks.	..	Cure.

TABLE V.

OPERATOR.	DISEASE.	DURATION OF DISEASE.	PATIENT'S AGE.	NERVE STRETCHED.	DURATION OF OBSERVATION.	KIND OF HEALING.	RESULT.
1. Underwood.	Trigeminal epileptiform neuralgia.	..	..	....	..	..	Cure
2. Purdie	Do.	Sev'ral years.	..	Infra-orbital.....	Over 1 year.	..	Do.
3. Janny.....	Do.	..	..	Supra, infra-orbital, frontal, and inf. alveol.	..	..	Do.
4. Scheving...	Do.	..	..	....	..	..	Do.

TABLE VI.

OPERATOR.	DISEASE.	DURATION OF DISEASE.	PATIENT'S AGE.	NERVE STRETCHED	DURATION OF OBSERVATION.	KIND OF HEALING	RESULT.
1. Davidson..... ...	Mimic facial spasm (infra-orbital).	1 year.....	53	R. infra-orbital.	....	....	Cure.
2. Baum...	Mimic facial spasm.	6 years....	35.....	Left facial.	Probably about 3 months.	1st int ..	Cure.
3. Schüssler.....	Do.	8 years....	39.....	Do	134 days	Suppuration.	Cure.
4. Sturge and Godlee.	Do.	6 years....	72.....	Right facial	3 months.....	1st int ..	At first paralysis; no pains for 2 months after.
5. Eulenburg.....	Do.	2 years ...	27.....	Left facial.	....	....	Paralysis face; degeneration reaction; then return of spasms.
6. Bernhardt..... ...	Do.	....	....	One facial.	...	....	Relief for only two days, but no paralysis.
7. Bernhardt.....	Do.	. ..	....	Do.	....	....	Facial paralysis; degeneration reaction; then return of spasms.
8. Putnam.....	Do.	3 years....	Young man	Do.	3 months.....	....	Cure; but facial paralysis for 2 months.
Southam.....	Do.	2 years....	53	Do.	6 weeks.....	....	Cure; but facial paralysis for 6 weeks.

malady in so slight an operation as this. We may safely regard nerve-stretching, then, as a valuable addition to our procedures of cure and relief in functional neuralgia, of traumatic or idiopathic origin, but more especially in sciatica and traumatic or traumatic-like neuralgiæ.

The next table, V., is one of four cases of tic douloureux. It is claimed that all were cured. Unfortunately, however, the time of subsequent observation has only been obtainable in one case, in which it was one year. In Dr. Underwood's case it was not stated, and the other two were in non-accessible journals and theses.

Table VI. contains nine cases of mimic facial spasm treated by nerve stretching.

TABLE VII.

OPERATOR.	DISEASE.	DURATION OF DISEASE.	PATIENT'S AGE.	NERVE STRETCHED.	DURATION OF OBSERVATION.	KIND OF HEALING.	RESULT.
1. Annandale....	Torticollis.	3 mos.	..	Accessory .	..	....	Failure.
2. Bernhardt	Spasm of spinal accessory.	..	..	Do.	..	....	Do.
3. Southam.....	Torticollis	..	..	Do.	6 wks.	....	Great relief for 6 weeks; then relapse.
4. Southam.....	Do.	..	..	Do.	7 mos.	....	Great relief.
5. V. Mosengeil .	Do.	2 yrs..	56	Both accessories.	..	....	Cure.
6. Küster.....	Do.	..	..	Accessory .	..	....	Slight relief.

There are stated to have been six cures; but in one of these the time of subsequent observation is not stated, and this one must be excluded. This subsequent period of observation in the others—respectively six weeks, three months, and five months—is sufficient to show that marked relief was obtained, such as could be expected from no other remedy, but it does not warrant the assertion of a

TABLE VIII.

OPERATOR.	DISEASE.	DURATION OF DISEASE.	PAT'S AGE.	NERVE STRETCHED.	SUBSEQUENT OBSERVATION.	KIND OF HEALING.	RESULT.
1. Nussbaum...	Tonic spasms in lower limb, from trauma.	11 years...	23....	Brachial plexus, inf. cerv. nerve.	102 days	Erysipelas.	Cure.
2. Farrar.....	Tonic spasm of adductors from trauma.	....	....	Left sciat.....	....	....	Slight improvement in one limb.
3. V. Moralt ..	Radial paralysis from fracture.	....	boy...	Radial	....	....	Gradual cure (?).
4. Blum.....	Radial and median paralysis, incised wound.	..	....	Radial and median.	....	....	Great improvement.
5. Czerny.....	Congenital hemiplegic contracture and spasms.	....	....	Axillary plexus...	....	....	Cessation of spasms for one year; but contracture same.
6. Schutter	Contracture of one limb.....	....	....	Sciatic	....	....	Slight improvement.
7. Nussbaum ..	Spastic contraction upper limb, after bullet wound.	....	....	Brach. plexus and inferior cervical.	....	....	Great improvement.

TABLE IX.

OPERATOR.	DISEASE.	DURATION OF DISEASE.	PATIENT'S AGE.	NERVE STRETCHED.	DURATION OF IMP'MENT.	KIND OF HEALING.	RESULT.
1. Fenger	Locomot. ataxia	2 years...	54	Both sciat. and crurals.	....	First intention.	Death from pyæmia.
2. Socin	" "	25 " ...	33	Right sciatic...	....	Suppuration ...	Pain partially ceased, death; multiple embolism from thrombosis in right popliteal vein.
3. Hammond.....	" "	25 " ...	Not stated.	Both sciatics ..	30 days . .	First intention.	Relief.
4. "	" "	2 " ..	"	Sciatic	12 " ...	Not stated....	Relief.
5. Sury-Bienz.....	" "	Not stated.	33	Both sciatics..	14 " ..	Suppuration ...	Death, pulmonary embolism from thrombosis R. crural vein in popliteal space.
6. Thiersch.....	" "	22 years ..	49	" ...	4 months .	Not stated.....	Slight relief, but relapse to old condition.
7. "	" "	Not very advanced.	Middle aged.	" ...	Not stated	"	do.
8. Hirschfelder.....	" "	Not stated.	Not stated	" ...	....	....	Death four days after operation
9. Erlenmeyer	" "	9 years ...	39	" ...	Not stated.	Lengthy supp.; erysipelas.	Slight increase strength temporarily; then old condition.
10. Debove.....	" "	Old case...	Not stated.	Left sciatic....	2 weeks...	Suppuration ...	Slight improvement.
11. Fisher & Schweninger..	" "	8 years...	36	"	....	....	Improvement in pains.
12. Müller & Ebner.....	" "	14 " ...	50	Right crural...	....	....	Pains disappeared, paresis improved, also ataxia.

TABLE IX.—Continued.

OPERATOR.	DISEASE.	DURATION OF DISEASE.	PATIENT'S AGE.	NERVE STRETCHED.	DURATION OF IMP'MENT.	KIND OF HEALING.	RESULT.
13. Müller & Ebner.....	Locomot. ataxia	22 years...	52	One crural.....	....	..	Pains improved, but anæsthesia; otherwise very slight improvement.
14. Bardeleben (Nocht.)..	" "	9 " ...	42	Both sciatics...	6 weeks .	Suppur. in one; first intention in other; pyæmia.	Pains disappeared; slight improvement in ataxia.
15. Bardeleben (Nocht)...	" "	8 " ...	40	Brachial plexus.	8 months.	First intention.	Pains disappeared; otherwise same.
16. Johnston.	" "	12 " ...	39	One sciatic ...	5 weeks	....	Disappearance of lancinating pains; otherwise same.
17. Cavafy...	" "	3½ " ...	48	Left sciatic....	2½ months	Suppuration ...	Pains ceased entirely for one month; otherwise absolutely same.
18. Bastian	" "	3½ " ...	39	Both sciatic....	About 3 months.	....	Pains slightly better; otherwise same.
19. Weltrubsky.....	" "	12 " ...	46	"	3 months..	First intention.	Slight improvement.
20. Gussenbauer.....	" "	12 " ...	46	....	About 1 month.	....	Pains ceased.
21. "	" "	1½ " ...	35	Both sciatic....	do.	....	Cessation of pains and an existing urinary incontinence, then death from pyelo-nephritis.

radical cure. These successes would constitute fifty-five per cent. In two of these successful cases, there was at first a facial paralysis. There were three failures, in two of which there ensued a facial paralysis proceeding to that quantitative and qualitative alteration in the electrical responses which is known as "Entartungsreaction," or "reaction of degeneration."

Table VII. is one of six cases of torticollis, with the result of one cure, but subsequent observation not given; two of great relief, in one subsequent observation for seven months, in the other a relapse after six weeks; one of slight relief, but time of observation not stated; and two failures. This is not very encouraging to the employment of stretching in torticollis.

In Table VIII. have been collected seven cases of spastic affections.

Of these seven, there were two cures (one doubtful one), three of great improvement, and two of slight relief.

This completes our list of the nervous disorders of relatively slight organic substratum in which the operation has been made use of. It has not been so potent an agent in the graver diseases. We have gathered together twenty-one cases of locomotor ataxia, as Table IX. will show.

There were five deaths, or twenty-three per cent. There were five cases of alleged relief to all the symptoms; but the time of observation extended only over thirty and twelve days, six weeks, and in one is not stated. It is well-known that spontaneous relief is common for much longer periods in locomotor ataxia. In some other cases there was relief to the pains, in no one instance, however, extending over six weeks, so far as we can learn. This is certainly a frightful exhibit—a temporary relief, at a cost of a twenty-three per cent death-rate, in a malady that ordinarily kills only after long years of duration!

TABLE X.

OPERATOR.	DISEASE.	DURATION OF DISEASE.	PATIENT'S AGE.	NERVE STRETCHED.	SUBSEQUENT OBSERVATION	KIND OF HEALING.	RESULT.
Masing ...	Idiopathic myelitis.	....	24	Sciatics, one crural	....	....	Great relief.
Morton ...	Do.	18 yrs.	64	Left sciatic	4 mos	....	Improvement of sensation; but relapse.
Berridge...	Myelitis (?).	9 yrs..	36	Do.	....	....	Relief to pain and contractures for 14 days; then relapse.
Thiersch ..	Myelitis...	4 yrs..	28	Sciatics ...	22 days.	Suppuration.	No improvement.

This table stands in no need of a commentator, nor do the following two (XI. and XII.).

TABLE XI.

OPERATOR.	DISEASE.	DURATION OF DISEASE.	PATIENT'S AGE.	SUBSEQUENT OBSERVATION.	KIND OF HEALING.	NERVE STRETCHED.	RESULT.
Czerny....	Kyphosis, myelitis.	....	..	....	.. .	Sciatics ...	Apparently worse; certainly no better.
Rosenbach.	Fracture, myelitis.	....	..	....	....	Do.	Reflexes restored; otherwise same.
Nussbaum.	Traumatic myelitis.	....	..	....	....	Crurals and sciatics.	Cessation of clonic movements; otherwise same.
Riedel ...	"Railway spine."	About 6 mos.	30	39 days.	....	Sciatics ...	Slight relief.

Besides these, Lamarre operated upon a case of alleged carcinoma of the spinal meninges, giving slight relief to the pains for fourteen days, then relapse, another stretching, relief for three days, then death from exhaustion;

TABLE XII.

OPERATOR.	DISEASE.	DURATION OF DISEASE.	PATIENT'S AGE.	NERVE STRETCHED.	SUBSEQUENT OBSERVATION.	KIND OF HEALING.	RESULT.
Westphal..	Spastic spinal paralysis.	....	30	Right crural.	....	....	Spastic phenomena ceased; flaccid paralysis both limbs, with rectal and vesical paralysis; later contracture and increased reflex excitability. Several months after, death. Lumbar myelitic foci.
Thiersch ..	Do.	6 yrs..	35	Sciatics ...	....	Suppuration.	Temporary relief for 14 days; then relapse.
Morton ...	Do.	10 mos	50	Do.	5 mos.	....	Very great relief; probably a cure.

Westphal has operated on three cases of paralysis agitans, and Morton on one, temporary and moderate improvement resulting in three, and death in one; Morton has operated on a case of athetosis, causing almost entire cessation of the athetotic movements, the patient being under observation for seventy days; Lawrie reports more or less relief to the anæsthesia of lepra in thirty cases, and Wallace two cases, although we have not been able to obtain the details; Kümmell gives the histories of seven operations upon the optic nerve, with dubious success; among twenty-eight cases of tetanus which were operated on, there were five cures, and three of great temporary relief; and some passing benefit has been obtained in epilepsy by the operation.

The molecular modus operandi of the effect produced by these nerve-stretchings has been a fertile source of explanations and argument, and must continue to be for some time. It is indisputable that certain things, visible to the eye, are done, and these are:

1. Adhesions are broken up that have existed between the nerve and its sheath, or the surrounding tissues.—In this manner an irritant is removed, just as when an adhesion between the glans penis and the prepuce is taken away. Fabricius Guillaume, as far back as thirty years, had great success in relieving rheumatic pain by forcible extension of articulations; and the secret of his good fortune, as well as of that which has recently befallen those who have simply hyper-extended the thigh for sciatica, is, in all probability, to be mainly found in this rupture of adhesions.

2. Rupture of nutritive vessels of the nerve, and consequent alteration in the supply of blood.—Vogt has found extravasations beneath the hook upon which the nerve was lifted, and above and below it in the sciatic notch, at the entrance of the nerve-branches into the thigh muscles and those going to the peroneal muscles, and in the popliteal space. These were the points which Klemm pointed out as peculiarly liable to be the sites of disseminated neuritis. These extravasations lasted five to six weeks, then disappeared entirely. They were limited to the conjunctival sheath.

3. A neuritis has been observed at the point where the nerve was stretched; in some there has been an apparent neuritis migrans; in some degeneration of nerve-fibres in scanty number, which must have been numerous in the instances where the reaction of degeneration was present.

4. There has been found a myelitis at the point of entrance of nerves into the cord.

5. When a nerve is forcibly stretched, the cord and

medulla oblongata are probably moved, too.—Dr. Dana's experiments, which would negative this assumption, were only made on animals, whilst the confirmatory ones of Vogt and Gussenbauer were performed on human corpses, and with a minuteness of detail and description that invests them with a credibility not to be lightly impugned.

But over and above all these visible things, the most important cause is one that cannot be dragged captive to the stage of the microscrope. It is that unknown molecular change which is made on nerve-centres through sensory nerves; the same which is made by blows, electricity, massage, barometric and thermometric variations, circumcision, operations on the female genitals, including the uterus, operations for calculus, and operations of all kinds. What can make a more forcible impression upon a nerve-centre than to lay bare a structure which nature has endowed with a monopoly in the carriage of sensations—by this laying bare depriving it of the textural shields beneath which this same nature has anxiously hidden it—take it up into the hand, handle it, and then pull upon it steadily, heavily, and long? Physiologically it is just the same as if we beat the patient with clubs all over the peripheral distribution of that nerve—with this important distinction: that, in the neater deed of stretching, we do not induce the profound disturbance of all the other tissues, as in the clubbing. And when to this profound impression of the mere stretching of the nerve, we add the lesser impressions of the removal of irritating adhesions, the interruption in the blood nutrition, the neuritides and the myelitides, the movement of cord and medulla oblongata and possibly even of the intracranial masses, we would have certainly excellent reasons to suppose *a priori* that this procedure was capable of powerfully influencing nerve-centres. Indeed, we should be justified in regarding it from this *a priori* stand-point as dangerous, because of this very po-

tency ; and that its limitations are being so rapidly marked out, is greatly to the honor of the boldly progressive spirit which so eminently distinguishes the medical profession.

In determining the question of the force to be employed, the following figures are of importance:

Symington saw the sciatic ruptured, in a robust subject, with a weight of 65 kilogrammes, while only 32 were required in an emaciated subject, a girl dead of phthisis. Gillette found that the rupture of the sciatic needs 75 to 100 kilogrammes, and tore out the medial, cubital, and internal cutaneous brachial all at the same time, with from 45 to 60 kilogrammes. Trombetta gives this table:

Rupture of sciatic (trunk)	.....	84 kilogr.
" " intern. popl	.....	52 "
" " crural	.....	38 "
" median	.....	38 "
" cubital	.....	27 "
" radial	.....	27 "
" brachial plexus (neck)	.....	22–29 "
" " " " (shoulder)	.....	16–17 "
" suborbital	.....	2 k. 477
" supraorbital	.....	2 k. 720
" mental	.....	2 k. 492

It has been estimated that the force generally employed has not exceeded 18 to 20 kilogrammes for the nerves of the extremities. Gillette has invented an instrument for measuring the force used, which he calls the "élongateur." It is simply a hook with a dynamometer in the handle, and should be very useful.

There does not seem to be any use in employing extreme force. The production of anæsthesia or paralysis would appear to be a blunder, inasmuch as in this way the principle of the stretching is departed from, and we pass over into another field of phenomena, and do rudely what we could do much more precisely by section. At the same time, we should certainly employ force enough to break up adhesions, if any have formed, or, in the absence of these,

we should make use of as much strength as it is possible to do short of decided structural injury to the nerve. What this happy medium, this *juste milieu* may be, we do not yet know. Some operators have felt, they thought, a sensation as of something giving way along the nerve. If this sensation could be relied on, it might be a valuable guide in the event of adhesions having formed; but it is difficult to perceive how it could be serviceable otherwise. Certainly the force should in all cases be measured, and guided by the foregoing figures, no such strength should be brought to bear as will rupture the nerve. Probably one-half or two-thirds of the strength above indicated may answer therapeutic purposes; still, further experience may show that a force insufficient for rupture may be sufficient for paralysis or anæsthesia. At present, we cannot speak positively in more detail.

Forcible flexion of the thigh upon the body has been done by Trombetta, Clark, Lange, Fieber, Gussenbauer, for the relief of sciatica, each time successfully, it is alleged. It is doubtful whether any influence could be exerted by this method upon the sciatic, unless it were bound down by adhesions, for Vogt claims to have demonstrated that the most extreme normal movements of the body cannot abnormally stretch normal nerves. It may be well to remember what has been already stated, that Guillaume thirty years ago extended articulations, to the great relief of arthritic and rheumatic pains.

We shall make it our business to follow the development of this subject, and endeavor, in the future, to glean some definite information about the influence of the age, the kind of healing, and the nerve stretched, upon the result of the operation. L. C. G.

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We glean from a report in the *Journal of Mental Science*, the editors of that quarterly refraining from commenting much on the report, that expert testimony in cases of dis-

[1] Our cordial thanks are due to Dr. Vandervoort and Dr. Klotz, librarians of the New York Hospital and German Dispensary libraries, for their kindness in facilitating our work of reference in this article. L. C. G.

puted insanity in Canadian courts is on a level scarcely higher than in some of our own. It is true that our brethren over the border have the advantage of us, in that none of their experts ventured on such statements as that there is no hereditary insanity, that it is of no importance whether a given person's uncles and cousins are insane, that people may become insane after being entranced, that moral insanity is wickedness, pyromania incendiarism, and kleptomania theft, that insanity makes some persons more moral, that insanity can never be anything but acquired, and that a change of character is essential to support its diagnosis, while the state of the skin is the criterion of alienation. Still, the trial of Hayvren provoked the announcement that in epileptic insanity the fits are always momentary, that want of sleep is never a sign of insanity, and that a murderer may commit his crime under an incontrollable impulse, on an epileptic basis, and yet know the difference between right and wrong at that very moment. Our esteemed cotemporary confines its criticism of the case to the legal opinions pronounced in the course of the trial; and, indeed, it would have required great self-restraint to refrain from condemning the assumption of a judge who, in his charge to the jury, flippantly spoke of Dr. Howard as "one of those scientific enthusiasts whose mind on this subject is formed of many theories." We think that Dr. Howard merits positive indorsement, and we do not believe that a stronger support could be given to our colleague than the furnishing of a bare statement of the undisputed facts, on the strength of which he and Dr. Angus McDonald pronounced Hayvren insane. The accused had been an inmate of the penitentiary when the homicide was committed, he stabbing a fellow-convict for calling him a bad name, as the prosecution claimed. On a previous occasion, he had attempted to escape from jail by means of a

thin rope, which broke, and he, falling a distance of thirty feet, had a dilatation of the aorta resulting, which led to his asking the doctor to remove "something alive in his bowels." In his youth, Hayvren had epileptic fits twice a week, began drinking heavily at sixteen, and had had spells of furor, in which he had to be "tied"; a few days before the murder, he rushed up to a fellow-convict, opened his shirt, and asked him to run his knife through his breast. One of the medical witnesses for the prosecution inadvertently sustained Dr. Howard's view, by describing the patient to have been in a perspiration with fright at sight of a stranger, and attributing the depravity of the prisoner to the "muddle" in which he had passed the greater part of his life. The low state of his intellect was vouched for by witnesses called by the defence as well as those called by the prosecution. The convict was executed, and profound deviations from the normal convolutional type discovered in the cerebral hemispheres. The gentleman conducting the examination did not, unfortunately, limit himself to chronicling the appearances found after death, but accompanied his post-mortem record by several uncalled-for and unwarrantable statements, whose general tenor is best characterized by mentioning the fact that Professor Huxley, who, although an excellent comparative anatomist, is not usually regarded as an alienist, seems to be Dr. Osler's chief authority for making them. It is greatly to be regretted that, in view of the nature of the deformity found, their interpretation should be confused by attempting to bring them into relation with the findings of Benedict, which have now received their *coup de grace* in Austria, England, and this country.

While the following document explains itself, we may be permitted to refer particularly to the fact, that although asking or pretending to ask for information of a character

which in part, at least, only physicians can give, it is addressed exclusively to the legal profession. Comment on such a procedure, and in the light of the fact that the medical profession, particularly as represented in the Neurological Society, determined the passing of the Senate resolution alluded to, is unnecessary:

STATE OF NEW YORK:

OEFICE OF THE ATTORNEY GENERAL.

ALBANY, February 8th, 1882.

DEAR SIR:—We beg leave to call your attention to the subjoined resolution, which passed the State Senate on the 4th day of January, inst.

"*Resolved*, That the Attorney General and State Commissioner in Lunacy be requested to report to the Legislature such amendments to the laws relating to the insane as may be necessary for the better perfecting of the same, and that they be further requested to make such report at as early a day as may be practicable."

While our present lunacy laws are in the main satisfactory, and no extensive revision or radical changes are deemed necessary, it is yet believed that these statutes need to be developed in portions, at least, of their provisions, so as to enlarge the areas of guardianship within which they are intended to exercise the parental supervision of the State over its insane wards.

For this purpose, and in advance of any suggestions which it may devolve upon us to make, we are anxious to secure a full conference with the Judiciary of the State and the leading members of its Bar.

The points to which we would more particularly direct your attention, and upon which your opinion is solicited, are:

1st. The question of bringing the present form of government of each State Lunatic Asylum as a public charitable

trust under one uniform system of administration. 2d. The proper limits of *extra judicial* supervision of such trusts by the State Board of Charities. 3d. The limitations to be put upon the powers of personal custody of lunatics exercised by their committees in removing them *extra-territorially*. 4th. The length of personal custody, involving restraints upon personal liberty, and regulation of the domicile of habitual drunkards, which should be imposed upon them when adjudicated to be such. 5th. The disposal of insane criminals acquitted on the ground of insanity in respect to the question: 1st. Whether any determinate time may be fixed by the court, during which such party should be detained for personal observation and *public safety* in an asylum, and if not, then, 2d. Whether any date can be fixed before which no application for a release, on the ground of alleged recovery, shall be entertained. 6th. Whether permanent insanity, requiring the confinement in an asylum of either a husband or wife continually during seven years, and being adjudicated thereafter as probably incurable, shall constitute a valid ground for divorce, providing that in case of the insanity of the wife, she shall not thereby forfeit her right of dower by reason of any decree dissolving the marriage. This inquiry has been suggested to us, with a view to eliciting an expression of public opinion upon it. 7th. If in your experience of the practical operation of these statutes any modifications or changes are deemed necessary, you will oblige us by stating them. Early replies to the above inquiries are solicited under the request of the resolution calling for a speedy report.

Very respectfully yours,

(signed) LESLIE W. RUSSELL,

Attorney General.

JOHN ORDRONAUX,

State Commissioner in Lunacy.

The *Lancet* contains a short notice of Dr. Gowers' views on the value of ovarian compression, and approves of them. Dr. Gowers says: "The crucial test of Charcot—in hysterical affections—is rarely successful in this country. An attack can scarcely ever be thus induced; and although it may sometimes be arrested by this means, the effect is not sufficiently constant to possess any diagnostic value." We presume that American observations will confirm those of Dr. Gowers, or, at least, that ovarian compression—more properly speaking, compression of the inguinal region—has no special virtue over compression of the clavicle, the epigastrium, or any other part of the body. Hysteria is not a safe disease wherein to seek for pathognomic points.

The same periodical, speaking with the impartiality of a distance of over three thousand miles, refers to that recent charge of Chief Justice Davis which was quoted so emphatically in the Guiteau trial, and says—as it seems to us—almost with the voice of posterity, "It will at once be perceived that this drives us backward, and leaves us where we were at the commencement of the century; indeed, to a period much more remote than that. Joan of Arc would have fallen into the clutches of the executioner to-day, in spite of all that science has discovered with regard to the nature and causation of 'voices' and visions. Practically, no doubt, the Guiteau trial may make little, if any, difference to us on this side of the Atlantic." This was written February 4th, before the recent assault upon the Queen. We hope that, in dealing with this event, the *Lancet* may have the courage of the following convictions. "Our own judges have long been, and are, stone deaf to the monitions of science; but it is disquieting, not to say humiliating, to be told in language so plain as this trial has used in addressing public opinion in all civilized

countries, that law utterly rejects the teachings of modern science, and cannot and will not believe that any man who knows that he is doing what it has pronounced wrong can possibly be insane."

Of all the interesting discoveries of our vivacious day, that of the relationship between excision of the tonsils and suicide is the most entertaining. Dr. Rubio, of Madrid, and Dr. Rodriguez, of the same city, call attention, according to a writer in a late number of the *Medical Times and Gazette* (December 31st, 1881), to the fact that so many young persons commit suicide after excision of the tonsils. The Madrid tonsils must have more direct connection with the cortex than the American ones. Prof. Rubio's theory is ingenious. It is an application of the doctrines of localization to the alimentary tract. He regards the uvula as a centre of gastric and respiratory reflex movements. Thence taking his departure, he readily explains how suicide is committed when the tonsils are removed. Absit omen!

The distinguished anatomist, Forel, believes that the fusion of the fornix with a longitudinal fasciculus of the centrum ovale, observed by him in the brain of an adult microcephalous idiot whose corpus callosum was altogether wanting, proves the ontogenetic relation of the fornix to the intra-cerebral medullary tracts. He further asserts that it is the corpus callosum which, in its development, separates the fornix from the medullary nucleus of the hemispheres. The former proposition is not only correct, but it is also corroborative of Meynert, who incorporated the fornix with his highest projection system. The latter proposition we do not think tenable. The first indication of a fornix in the reptilia is a short fibrillar mass connecting the inverted edge of the thin-walled cerebral

hemisphere with the thalamus, and which is altogether distinct from the representative of the corona radiata. A similar relation is noticed in the embryos of higher animals, and it seems that in the revolution which the posterior half of the hemispheric vesicle makes around the thalamus as an axis, the originally short and direct fornix is drawn out into a long column, which follows in its course the rotating inferior ventricular cornu. Any inference drawn from the observation of monstrosities is unsafe as long as it cannot be supported by observations made on normal brains, either mature or embryonic, or unless it at least harmonizes with such.

The sixth cerebral ventricle is a feature of coarse encephalic anatomy, commonly ignored in text-books and monographs dealing with the brain. Like the fifth ventricle, which is not a true ventricle—that is, not derived from a modification of the lumen of the medullary tube—it is a secondary formation. Just as the fifth ventricle is formed by the mesal faces of the atrophied hemispheric walls or the septum lucidum, the callosum and fornices, so the sixth is formed by the splenium of the callosum and the fornices. It is not constant, being found by Techini and Staurenghi in twenty-six subjects, out of one hundred and forty-five. The cavity is lined by epithelium and may become the seat of a hydropsy. This "ventricle," first described by Verga, is known to the German anatomists as the "Fornixventrikel."

Wiedersheim, the distinguished herpetological comparative anatomist, presented a number of interesting and suggestive facts in brain and neural anatomy to the Congress of German Alienists and Neurologists. Undoubtedly the most important of his communications was one relating to the nervous supply of the anterior extremity of

the *Protopterus*. This animal, from its dipnoic status—that is, combining physiologically, as it connects morphologically, the air- and the water-breathing vertebrates, presents the solution of an interesting problem in phyllogeny. The anterior extremity is connected through the scapular girdle with the branchial arches, and the pneumogastric nerve joins the brachial plexus, its derivative rami being traced into the free portion of the limb. This participation of one of the strictly cranial nerves in the innervation of an extremity furnishes a strong confirmation of Gegenbauer's hypothesis that the scapular arch and the anterior limbs are phyllogenetically derived from the branchial arches, for the pneumogastric is *par excellence* the nerve of those arches. In bony fishes the distribution of vagus filaments to scapular muscles has long been noted as being in support of Gegenbauer's theory, but *Protopterus* is the only known instance where this nerve or its filaments are given off to the free part of the limb.

The same observer at this meeting referred to a peculiarity noted by him in the *Hemidactylus verrucosus*, one of the *Ascalobotæ*. In this species, the posterior columns are swollen at and diverge to both sides of the *calamus scriptorius*, they then bend forwards, joined by a thin strand of nerve fibres, crossing the floor of the fourth ventricle, and together with it constitute the auditory nerve root of either side. This Wiedersheim appears to consider a novel observation and brings it in relation with Roller's description of an alleged spinal root of the auditory nerve in the human oblongata. We do not believe that Roller's observations can be substantiated; the direction in which his sections were made, preclude his ability to have decided whether the fasciculus, ordinarily considered a portion of the internal division of the cerebellar peduncle, joins the auditory root or not. We believe that these fibres in part,

and in obedience to the requirements of the reflexes, join spinal centres to the auditory nucleus, but the entry of an auditory bundle into the spinal tract system directly is not acceptable to the physiologist unless it can be substantiated by clear anatomical evidence. As to Wiedersheim's observation of a thin nerve-strand crossing the ventricular floor, and its apparent junction with the posterior columns, we can add that the Pseudopus, Alligator, and particularly the Iguana, exhibit the same appearance; it is, however, deceptive. In all these animals, the great mass of the auditory nerve appears to run into the crenulated auditory eminence, which may be the homologue of the dentated nucleus of the cerebellum or of the tæniola cinerea (?); a varying proportion of the fibres cross the ventricular floor as a visible transverse ridge, and in the Iguana rise up as distinctly as the posterior longitudinal fasciculus in turtles. It seems that the less aquatic the habits of a reptile the more distinct is this ridge, and this may suggest a relation between it and the specialized *rôle* of the auditory apparatus in land-animals.

The junction of the posterior columns is only apparent, some of the fibres of the latter are lost in the reticular field, others in the zonal decussation, still others run directly, or interrupted by molecular gray substance, towards the cerebellum, but none have to our knowledge been traced into the auditory roots.

In the feverish search for new facts in mental science, many an old but sound observation runs danger of becoming so antiquated that its resurrection strikes the student in the light of a novelty. Dr. Donkersloot, of Utrecht, a few years ago asked for the experience of his colleagues on the relation of the color of the hair and eyes with special forms of insanity. He had found that mania predominated with blonde persons and melancholia with

those of a darker complexion. We have observed this also, and as old a writer as Esquirol called attention to the same fact. Dr. Donkersloot's observation that mania occurring with blondes and melancholia with brunettes present better prospects of recovery, than where the complexion and the psychosis do not harmonize, is new, and if correct, valuable and suggestive.

It is almost needless to state that the reference to "Muhr" on page 54 of the February number, should read Munk, as it correctly stands in other parts of the same article.

The insane asylum at Yankton, Dakota, a wooden structure, was destroyed by fire on the 2d of April. Three of the inmates perished in the flames. The same number perished in the conflagration which a month earlier consumed one of the wings of the Flatbush asylum. The coroner's inquest held after the latter disaster failed to reveal the origin of the fire, though it appears most probable that it was due to carelessness on the part of either an attendant or of the patients, who had access to matches. An interesting feature of the inquiry was the fact that several lunatics gave testimony to which weight was attached, before the coroner's jury.

The *Lancet* states that it has learnt from Dr. McGowan that color blindness is rare, if not lacking, among the Chinese. Dr. McGowan examined over a thousand natives, and crews of gunboats in the imperial service of China, without finding any Daltonism. It is also stated that Nubians are free from this defect. Dr. McGowan's Chinese and Japanese subjects, those he examined, had generally dark hazel irides, some having them black.

The paper read by Schröter, of Dalldorf, before the Berlin society of alienists, like the discussion which it elicited, was notable for a liberal humanitarian spirit, scientific thoroughness, and good sense. The paper opened with the propositions that the lunatic who has committed a crime is entitled to all the privileges of other lunatics, and that the convict, who has become insane, is entitled to the privileges ordinarily conceded to criminals and lunatics. The giving of furloughs to patients conditional on their good behavior, and the conditional discharge from imprisonment, are among the most important privileges of the patient and prisoner, and in our enlightened age it is only proper that these should be conceded where they can be conceded to the advantage of the individual, without compromising the safety of society. If the criminal lunatic or the insane criminal presents evidences of moral insanity, if his crime was committed under the influence of hallucinatory or any other form of insanity threatening recurrence or periodicity, if the crime was a violent act, or if the insanity is of such a kind as to be unfavorably influenced in the contest for existence, or by excesses, a furlough or discharge will scarcely be thought of. But where the lunatic has become quiet and orderly, when that portion of his mental sphere which remains unclouded by the storm of insanity, is sufficient to permit him to support himself or his family, preventing their pauperization, and to recognize his own condition, it would be unwise from a politico-economical, cruel from a humanitarian, and indefensible from a medical point of view to throw away an opportunity of accomplishing much good without doing any harm. The furlough system is extensively employed in Germany, and while a crime has been occasionally committed by a patient on furlough, such an occurrence is vastly more rare than a homicide or suicide by a prematurely discharged patient in this country, nay,

rarer even than the crimes committed by the insane within the very walls of our institutions; we have had at least one homicide and one incendiarism perpetrated in the latter, within the very short period of six months.

The diagnostic skill of the asylum physician, here as elsewhere, is the safety guard of society. The true alienist, acquainted with every phase of insanity, accustomed to analyze the processes of the diseased mind, interested in his field and aware of his responsibility, will be able to draw the line, quite sharply, between those classes of the insane who may be made useful members of society, and those who must remain lost to it forever.

The *American Journal of the Medical Sciences*, January number, contains an excellent review, presumably by Dr. Chas. K. Mills, of Philadelphia, of the works of Braid, Matthias Duval, Heidenhain, Richer, Charcot, and Czermak. It is really an article in itself. To those who desire to obtain a general idea of the present condition of our knowledge upon this subject, we can fully recommend it.

A new alkaloid has been recently added to our materia medica, by Dr. Laborde. It is found in the mother liquid remaining behind after the isolation of aconitine, and is termed *napelline*. This alkaloid is amorphous, readily soluble in water, ether, and alcohol, and produces effects similar to those of narceine. It has been tried in cases of prosopalgia, intercostal neuralgia, and sciatica, in doses of three centigrammes, and with success; its physiological action is chiefly limited to the production of a deep calm sleep. There is some uncertainty as to the identity of this alkaloid, as the name napelline has been given both to the extremely poisonous aconitine of Morson, and to a preparation of Hübschmann made from commercial aconitine.

According to a notice in the *Lancet*, Prof. Ladenburg has succeeded in obtaining from henbane a second alkaloid, hyoscine, whose existence had been suspected from the difference between the physiological actions of the crystallized and amorphous hyoscyamine. It appears to be isomeric with atropine and hyoscyamine, and has the empirical formula of $C_{17}H_{23}NO_3$. Atropine and hyoscyamine split up into tropic acid and tropine, whilst hyoscine splits up into tropic acid and pseudo-tropine.

M. Lecorché, in a communication to the Académie de Médecine, affirms that grave structural changes in the liver will arrest diabetes. Hepatic congestion is invariable, and, later on secondary structural changes occur. At the same meeting M. Magitot stated that diabetics are extremely liable to a jaw affection, which he names alveolar osteo-periostitis, which may begin with the onset of the disease and continue throughout it. This jaw trouble begins by a deviation of the teeth from the perpendicular, they then loosen and fall out. The alveolar borders are absorbed, sometimes after gangrene of the jaw, which latter symptom usually precedes death.

The proceedings of the Ophthalmological Society of the United Kingdom, reported in the *Lancet* of December 8th and 18th, 1881, were of considerable interest from a neurological point of view. Dr. Gowers related two cases of optic neuritis in chorea. One was a boy, æt. 11, with "paralytic chorea" and distinct double neuritis, who gradually recovered and remained well. The other was a man of twenty, with chorea following acute rheumatism, and who had a double systolic murmur and no albuminuria. These were the only two Dr. Gowers had seen in a large number of cases of chorea, and Dr. Hughlings Jackson had recorded the only other case. Dr. Gowers further

related a case of a man of forty-five, with combined lateral and posterior sclerosis, who had a central scotoma transversely oval in shape in each field, including the fixing and blind point. Both discs were gray and hazy, vessels not reduced in size. He was a smoker, and after a discontinuance of this habit for two weeks the neuritis was less. Dr. Gowers regarded this as an instance in which tobacco amblyopia was produced the more readily because the nerves were already diseased. The same ophthalmologist described a case of hemiopia in one eye and complete blindness in the other, occurring suddenly in a man of forty, suffering from the first stage of locomotor ataxia.

Mr. E. C. Fitzgerald, of Dublin, read a paper on Unilateral Exophthalmus, which was intended to support von Graefe's view, that the failure of the lid to follow the movements of the eyeball was characteristic of the disease in question. Mr. Bowman supported the author, but Dr. Gowers thought the absence of this symptom of small consequence.

Dr. J. Dreschfeld, of Manchester, in a recent article in the *Lancet* (Jan. 7th and 14th), adds more material to the comparatively new question of the association of optic neuritis and acute myelitis. The extent of our knowledge in this matter would seem to be as follows: Clifford Allbutt[1] describes congestion with or without œdema, uniform redness of the disc, slight neuritis, as having occurred from injuries to the cord, especially when these injuries impinge high up. Mooren[2] has observed cases of spinal concussion followed by optic neuritis. Thorowgood[3] has seen a blow on the neck, producing pain and tenderness, followed within a few weeks by a well-marked

[1] Gowers, Ophthalmoscopy, p. 155.
[2] E. Pflüger, Arch. f. Ophthalm., xxiv., p. 169, 1878.
[3] Clin. Transact., viii., p. 80, 1875.

optic neuritis. Abadie[1] records an optic atrophy during a caries of the spine; Gowers, another of somewhat doubtful import, however; and Clifford Allbutt[2] still another after a dorsal myelitis. Erb[3] narrates a case of marked optic neuritis occurring in a transverse dorsal myelitis. E. C. Seguin[4] describes two cases of transverse myelitis with which there was associated an optic neuritis; but as the first of these presented some evidence of a cerebral affection, and Dr. Seguin's diagnosis was that of a double lesion, one in the cord and the other at the base of the brain involving the chiasm: the spinal lesion cannot with certainty be regarded as the cause of the optic changes. Dr. Dreschfeld now adds two cases. The first consisted of a myelitis of the cord in the cervical region, but there was also found post-mortem a congestion of the brain, and there is nothing to prove that this cerebral congestion might not have induced the optic neuritis. The second case is one of an acute disseminated myelitis of the lumbar and dorsal regions, and the optic neuritis observed went on to complete atrophy and total blindness.

Dr. Tuckwell, of Oxford, relates (*Lancet*, Jan. 14th, 1882) a case which seems to have been of syphilitic causation, although the proof of this is not very startling. The symptoms were: paralysis of muscles of lower limbs and back, lack of reaction of certain of these paralyzed muscles to either faradism or galvanism, absent patellar tendon reflex, numbness of fingers and below knees, anæsthesia of same parts, perfect control over sphincters, slight incoordination (?), jerky, rhythmical movements of hand and arm, and well-marked left optic neuritis, and a slight degree of the same condition on the right. No cerebral

[1] Bull. de la Soc. de Chirurgie, 12 Jan., 1876.
[2] Gowers, op. cit., p. 149.
[3] Arch. f. Psych., vol. x., p. 146, 1879.
[4] Journ. of Nervous and Mental Diseases, April, 1880.

symptoms whatever. There was certainly a myelitis in this case, but, from the symptoms and the suspected syphilitic causation, it was probably a meningo-myelitis. The general symptoms and the neuritis greatly improved, the right disc becoming quite normal, the left disc remaining somewhat blurred. The treatment was with large doses of the iodide of potash and galvanism.

The "*Archives Italiennes de Biologie*" is the title of a new bimonthly publication, intended more particularly for Italian readers. Its editors, C. Emery and A. Mosso, propose to make their journal a medium for the wider circulation of foreign articles in Italy, and of Italian writings among foreign biologists. On account of the international character of the French tongue, the journal will appear in that language; it is issued at Turin.

The following changes have occurred in American asylums since our first issue left the press. Dr. Bancroft, of the New Hampshire Asylum, has resigned the superintendency, and is succeeded by his son Dr. W. H. Bancroft; Dr. W. H. Pilgrim has been appointed assistant physician to the Auburn criminal asylum in place of Dr. Gorton, who resigned. A general rumor has reached us that all the asylum superintendents of Virginia have been dismissed their positions through some change in the political constellation.

We have received the following circular from Dr. Kane with the request to call the attention of our readers to the queries contained therein:

"Members of the medical profession, especially those having had dealings with the insane, are earnestly requested to answer the following questions fully, yet concisely. The subject is one of so much importance, medico-

legally, and otherwise, and so very little is to be found upon it in works on insanity, that it merits the attention asked for it. 1. Have you ever seen any cases of insanity, temporary or permanent, or any deviation from the normal mental or moral state that could be traced directly to the use of a single large dose, or the continued use of opium, or any of its preparations or alkaloids? 2. Of what type was such insanity? Give symptoms. 3. State patient's age, sex, civil condition, and occupation. 4. What was its duration and result? 5. State color of patient's hair, eyes, and complexion. 6. Was there any hereditary tendency to insanity, or any history of alcoholism, grave nervous disease, or any drug habit in the patient's ancestors? 7. What amount of the drug was used, and for how long a time? 8. What line of treatment was pursued? 9. Please answer the same questions regarding the use of chloral hydrate. 10. Please answer the same questions regarding the use of bromide of potassium, or any other drugs. In all cases so requested, communications will be considered strictly confidential. Reprints of the article, embodying the results of such statistics, will be sent to each correspondent." Answers to these questions should be directed to "Doctor H. H. Kane, De Quincy Home, Fort Washington, New York City."

REVIEW DEPARTMENT.

LEHRBUCH DER KRANKHEITEN DER PERIPHEREN NERVEN UND DES SYMPATHICUS, FUER AERTZE UND STUDIRENDE. (Text-book of the Diseases of the Peripheral Nerves and of the Sympathetic. For Physicians and Students.) By ADOLPH SEELIGMUELLER, Docent of Neuropathology and Electrotherapy in the University of Halle. Wreden: Braunschweig, 1882.

There are various ways of writing medical books. There is the bulky tome, replete with the commingled thought and experience of long years of mental action, whereof the language is terse and yet elegant, wherein the subjects are treated with a catholicity of view and yet with precision—the ideal text-book and work of reference. Then there is the work which should be called an introductory text-book, in which the topics are handled clearly, briefly, with little discussion, no attempt being made at learning or bibliographical references, the object being only to present such facts as will be necessary to give the reader an intelligent understanding of the subject without passing into specialistic detail—this is the ideal text-book for the student and the general medical man who desires to be fairly versed in this particular branch. Then comes your modern nondescript of hasty compilation, a sickly bastard in tattered and tinselled robes of learning, procreated, as we are always emphatically told, for "the busy practitioner"—this is your text-book made on true business principles. Dr. Seeligmüller's treatise is apparently an attempt at the second of these three types. The publisher, Wreden, of Braunschweig, has a collection of what are termed "shorter medical text-books," and this is one of the series. The author is possessed of so singularly clear a faculty of expression that the first impressions are very favorable; yet we think he failed in doing what he set out to do. The first requisite of every text-book,

whether it be long or short, learned or unlearned, is that it should be accurate, and by accuracy we mean not only that every individual statement should be exact, but that each particular topic should be illuminated with sufficient information to make the view of it an exact one. When Dr. Seeligmüller, for example, is treating of anæsthesia of the trigeminus, and how the diagnosis is to be made when the lesion is intra-cranial, he entirely omits any reference to the value of the ophthalmoscope, cephalalgia, emesis, in assisting one to a conclusion. And this is precisely an instance of what occurs throughout the book. The author, too, does not seem to be capable of fathoming the true import of phenomena, of which he will describe the details with the remarkable lucidity to which we have alluded—he grasps the letter, but not the spirit. Nor is there any attempt whatever to discriminate between the value of facts. That anybody has written anything, and has had it printed, seems to have been quite sufficient to make it authoritative to him. The habit of mind which is at the bottom of these faults, is shown most patently when general laws of nervous action are dealt with. Speaking of sensory functions of the cord and brain, he quotes with approval an idea of Bernstein's, that the sensory nerve meets with a resistance in the cortical cells, and that the more cells and the more resistance, the more conception will there be! He might as well quote some poetic idea of Keats or of Coleridge, after he had drank his wineglass of laudanum. Then, again, he defines an automatic movement as one that arises spontaneously in some portion of the motor apparatus, and thinks that there is no reflex in it, and that the psycho-motor centres are not concerned therein. We wonder how Dr. Seeligmüller would explain the various mental actions performed by a man who winds up his watch before going to bed, and then has no recollection of it afterwards.

The illustrations are mainly copied from others, and are fair, but there are two intended to represent the degenerative changes in the peripheral nerves which are simply wretched.

There is a very noticeable defect about this work which, however, it shares in common with most of the German and French writings. It makes no allusion to American authors. The day has long since passed by when our Transatlantic brethren can ignore American medical productions as provincial, since ignoring them is, therefore, only a manifestation of ignorance.

SUICIDE, AN ESSAY ON COMPARATIVE MORAL STATISTICS. By HENRY MORSELLI, M.D., Professor of Physiological Medicine,

Royal University, Turin. Being Abridged from the Original, as Volume XXXVI. of the International Scientific Series. New York: D. Appleton & Co.

The present moment seems peculiarly favorable to the presentation of a work on the subject of suicide. Whether it be due to the great accumulation of financial and political crises, or the increase of mental derangements, or a fundamental change in the *morale* of civilized races, it would seem as if a great suicidal wave were sweeping over our social horizon. The labors of Buckle, Wallace and Bagehot have taught the necessity of studying such complicated problems synthetically. The statistics of no one community, the analysis of no one cause, will suffice to explain their phenomena. Professor Morselli, fully recognizing this fact, has undertaken a study of the question of suicide from a statistical point of view, and one involving in its analysis the results of social scientific, anthropological, and medico-psychological inquiries.

The first fact demonstrated by a careful study of statistics is the regularity and the increase of suicide in civilized countries, which finds its expression in the painful conclusion, that "in the aggregate of the civilized States of Europe and America, the frequency of suicide shows a growing and uniform increase, so that generally, voluntary death since the beginning of the century has increased and goes on increasing more rapidly than the geometrical augmentation of the population and of the general mortality." Among the individual elements serving to explain this increase of suicide, climate deserves the least prominence as a direct factor. The only ascertained fact in this direction is that in the centre of Europe on an area of about 942,000 square kilometres comprised between 45–57° of latitude and 20–40° of longitude, are found the people who manifest the greatest inclination to suicide. The least amount of suicide is found on the isothermal line of + 17.5° C., running through Portugal, Spain, Italy, Corsica and probably Greece. That the mere feature of the temperature is not a very important one, is shown by the fact that on the isothermal line of + 10° C., there is the greatest variation. In the United States, for example, the suicidal rate is 35 per million ; in Ireland 16, in England 67, in Belgium 55, the Netherlands 35, Hanover 140, Prussian Saxony 228, Galicia 98. A more direct and constant relation is found with other cosmical influences, thus the regions of the great rivers are most afflicted by suicide *cæteris paribus*, while on the contrary marshy or excessively low lands, like the

Landes in France, the low countries about the Zuyder Zee and Jutland, show a lesser proportion. That suicide is most frequent in the warm seasons, is confirmed by Morselli; this observation is a familiar one to observers in New York. In this city a perfect suicidal furor occurs in certain summers, and the direct influence of the heat has no doubt as much to do with this as with the summer increase in violent crimes, similarly the result of insanity or passion, a fact to which, however, no reference is made by the author before us. It is certainly a noteworthy fact, in which he confirms Guerry, that the maximum of suicide falls under the summer solstice, the minimum under the winter solstice.

The most interesting portion of the volume, is the one relating to the influence of race and nationality as determining the suicidal rate. We have always believed that a most important contribution to the elucidation of the problem of suicide could be made from this side of the question. And it is to be regretted that the talented writer before us has not added to the numerous tables, which render his volume a mine of valuable information, one showing in four columns, the name of the nation, the proportion insane per million, the proportion of each form of insanity, and the suicidal rate. We believe that a noticable parallelism would be observed in these columns. The Germanic race preponderates over all others, and the German and Scandinavian branches divide the supremacy. The Anglo-Saxon stock has gained by its long separation from the German mother, through its admixture with other races, for its suicidal tendency is much smaller. The Celto-Romans, on the whole, show a small suicidal rate, this increases, however, with the geographical approach to the Germanic borders, and the fact is of startling interest, that as keen an analyst as Morselli, attributes the higher suicidal rate in France and Belgium to the remote, continuous, and the in modern times as persistent invasion of German elements sweeping up the valleys of the Scheldt, Seine, Somme, Meuse and even that of the Loire! The lowest suicidal rate is found among the Sclavonic peoples. Morselli in this part of the work fails to refer to the fact that the Bohemians, isolated from the Sclavonic parent stocks by an ocean of German States, have lost the relative immunity of suicide, just as the Anglo-Saxons have gained in this respect by separation from the "suicidal" race. The general conclusions, however, would seem to be flattering to the nations having most suicides. Savage peoples commit suicide only under the stress of hunger, but as civilization progresses a thousand new motives arise, with the mental needs. The reflection is not made

directly by the author, but it can be read between the lines, that a similar reason accounts for the lesser proportion of suicides among Catholics as compared with Protestants. Judaism has a very favorable influence; but this is an exceptional instance, it being the only religion tied up in a single race. A very interesting fact is, that other conditions duly considered, the votaries of that creed which is in a great minority in a given country, show a lesser number of suicides; the reason given by Legoyt is that the intolerance of the surrounding population exercises a sort of moral coercion, making the dissenters desirous to avoid giving any excuse for harsh criticisms.

As to social influences, it is concluded from the general parallelism of suicide and criminality that a deterioration of morals is favorable to suicide. To this there are, however, some marked exceptions, especially in southern Italy, where grave crimes are common and suicide is rare, and a revision of the question induces Morselli to modify the conclusion ordinarily held, by saying that in those countries "where crimes against property predominate, suicides are more frequent than where crimes of blood are frequent." Remarkably enough it is found, with regard to the influence of economical conditions, that it is not the exact period of economical crisis, but a subsequent one that shows an increase of suicide. The influence of the Austrian crisis of 1858–1859 was shown by an increase of suicides in 1860–1861. The Franco-Prussian war of 1870–1871 led to such increase in 1872–1873.

Without any question the most interesting part of the volume consists in its appended "suicidal" maps. These are maps of Europe and of the individual European countries, exhibiting by the intensity of shading, the proportion of suicides in the population. On glancing over the map of Europe it is seen in a moment that the highest proportion is found in Saxony, in the neighborhood of Paris and of Vienna. It is not alone race but also the density of the population which exert an important influence here, and as the contest for existence naturally culminates in the destruction of the weak, the only advice the author is able to give as a preventive against suicide, is "to develop in man the power of well-ordering sentiments and ideas by which to reach a certain aim in life; in short, to give force and energy to the moral character."

While we venture to regard this advice as a fruitless one, believing that in view of the author's earlier conclusions expressed in the same volume, all the good advice and training that might

be given would not materially change the suicidal ratio, we can only commend the perusal of the work to the reader as alone calculated to furnish an adequate conception of the vast array of useful facts gathered by its author, illustrative of many profitable lessons in sociology and ethnology. That in a treatise dealing with the statistics of so many lands and with authorities who have written in so many tongues, an occasional error should creep in, is not to be marveled at, and it is only where such errors are made the basis of conclusions that the reviewer considers it his duty to call attention to them.

It is stated, in speaking of the influence of religion on suicides, that in Saxony half the population are Catholics. The fact is that Saxony is one of the most intensely Protestant countries in the world, the stronghold of the Reformation, and a land in which the slight vestige of Catholicism (not counting one-twentieth of the population among its votaries), is only maintained by a court which has been Catholic since the time of the Elector Augustus the Strong.

THE STUDY OF TRANCE, MUSCLE-READING, AND ALLIED NERVOUS PHENOMENA IN EUROPE AND AMERICA, with a Letter upon the Moral Character of Trance Subjects, and a Defense of Dr. Charcot. By GEORGE M. BEARD, A.M., M.D.

CURRENT DELUSIONS RELATING TO HYPNOTISM (ARTIFICIAL TRANCE). Reprint from the *Alienist and Neurologist*, January, 1882. Same Author.

These two papers have been written by Dr. Beard apparently with the purpose of defending his views in reference to what he regards as certain varieties of trance. Inasmuch as this subject and others allied with it are attracting considerable attention in this country, England, and some portions of the continent, it is proper that Dr. Beard's claims and opinions should be passed in review.

The phenomena of hypnotism in the lower animals are being well and scientifically studied. These phenomena are intrinsically of quite a probable nature, are capable of being easily verified, and the proof concerning them has been laid before the scientific world in an eminently frank and satisfactory manner. So, too, the phenomena of trance, somnambulism, and catalepsy, that have been studied in La Salpêtrière, under the guidance of Professor Charcot, have, although often startling, not been beyond ordinary means of verification. The late review of this subject,

be it remarked *en passant*, in the January number of the *American Journal of Medical Sciences*, makes it a work of supererogation to dwell upon the details in this place. But Dr. Beard soars far above all this, and would have us pin our faith upon the coat-sleeves of human beings who behave in a manner that would seem positively supernatural to men of calm minds. Much vague talk is indulged in by Dr. Beard concerning the proper liberality of science. The persecution of Jenner, the cold shoulder turned to Braid, the expulsion of the Huguenots, the triumph of the anti-vivisectionists in Great Britain, are all dwelt upon with gusto as illustrative of the bigotry of scientists. Let us admit that scientific men are too often narrow-minded; still, it does not follow that every new morsel of scientific aliment must be swallowed before its savor or nutritious qualities have been tested; otherwise the distinction would be abolished between a Brillat Savarin and a dirt-eater, or the dweller along the rivers of Siam who eats putrid fish. Dr. Beard misconceives, we think, the character of true science. True science should be infinitely receptive; but true science should be extremely just, nay, even fastidious; and one of the greatest curses of every scientific profession is that so much of its energy is expended in purging its body of ill-judged matter that has been digested and too frequently assimilated. If, for instance, the claim be made that the papers read before a neurological society will turn upon the question of epilepsy at certain positions of the planet Saturn, true science will repress a smile, and calmly await the proof. If the proof come, undeniable, logical, link by link, true science will feel no tendency to smile, but will accept the facts, incredible though they may be. But the proof of this effect of the planet Saturn will need to be a thousand-fold more rigid than the proof of a new heart-sound, or of a new disease, or of a somnambulic state, simply because the neurologico-planetary facts are so utterly inexplicable by inference from any knowledge hitherto possessed. In a word, it is perfectly proper that new claims, in themselves entirely improbable, should be received with the utmost caution. And the man who cavils at this conservatism, himself lacks one of the most necessary qualities of an investigator. Thus, when Dr. Beard tells of the wondrous doings of mind-readers, how one man can place his hand upon another's forehead and tell his thoughts, well-regulated nervous systems gaze affrighted, and feebly gasp forth their desire to have the proof. And when Dr. Beard goes on to tell how the mind-reader need only be connected with his victim by means of a stick, the aforesaid nervous systems, although they

may have become shocked beyond utterance by this time, yet naturally burn with a still greater desire for the proof. In these two lengthy papers, Dr. Beard offers no satisfactory evidence whatever. He simply says that there have been some in his audiences who have been convinced, and that he has satisfied himself that his subjects have not been shamming. This dogmatic attitude is an unfortunate one for Dr. Beard to assume, for it forces upon our memory the occurrences of last summer in London concerning the performances of the mind-reader, Brown, before the International Congress, under Dr. Beard's patronage. The events were certainly not of a nature to cause any great confidence in Dr. Beard's acumen as a scientific detective. We fear that few scientific converts will be made by the example of the audiences.

The strong instinctive sense of the profession, which, although it often errs by being too conventional, is yet in the main indicative of intelligent honor, will enter a protest against pamphlets like these. They serve no purpose of interest to medical men. They may be pleasing to the laity; but then they should be restricted to lay journals. On the other hand, they have positively noxious tendencies. They invest a subject thoroughly meriting careful consideration with the halo of blue lights and an artificial aurora borealis. They substitute the gaping tendencies of credulity for the firm mouth of thought. They discourage the careful methods of Braid, Carpenter, Richet, Charcot, and they resurrect the flaring mystifications of Mesmer in those well-known wild Parisian days, when the minds of men were aflame and revolution was in the air. It was in this way that electricity suffered for so many years. While it was being proclaimed as the principle of life, while bridal couches charged with it were let out in London at £500 a night, in the firm belief that the offspring of the sapient occupants would so overcome their heredity as to be particularly brilliant and physically well-formed, while it was alleged to be capable of curing every complaint from an incipient constipation to a vesical calculus, while directions were being minutely given as to how to apply it to the sympathetic nerve for the relief of diseases with which the sympathetic had nothing to do, the directions being often, too, of such a nature that by them the sympathetic could not possibly have been reached, while so-called "magnetic doctors" and doctresses eked out their itinerant incomes by a vigorous use of "shocks," electricity suffered in the estimation of the profession, and it continues to suffer from this cause to day. So, the phenomena of

mind-reading and hypnotism, which undeniably have a large basis of truth, are contemned by many who would weigh them properly were they broached in a simple, scholarly, just way. And for this contempt pamphlets like these, and exhibitions in the same vein, are largely responsible.

EPILEPSY AND OTHER CHRONIC CONVULSIVE DISEASES: Their Causes, Symptoms, and Treatment. By W. R. GOWERS, M.D. London: Churchill, 1881.

A man who starts out to write a book on epilepsy is somewhat in the condition of one who writes one on the Bible—the subject may be interesting enough, but it is rather threadbare, and it scarcely warrants a whole book. And Dr. Gowers, although he has added a thoughtful and practically valuable contribution to our medical lore, might have done it much more concisely. Nevertheless, the work is well worthy perusal. This is especially the case with the chapters upon hysteroid convulsions. We do not know that there is anything especially new in the way of facts, but the treatment of the subject denotes clear thought that has been capable of so co-ordinating the facts as to make their exact significance apparent. The chapter on pathology is so good, up to a certain point, that we doubly regret its defects as it goes further. As an iconoclast, Dr. Gowers deserves praise. He pulls down many theories of the cause of epilepsy with a merciless hand, particularly that vaso-motor hypothesis, which argues so jauntily from the premise that interruption of the cerebral blood-supply through the carotids causes convulsions, to the conclusion that all convulsions are caused by anæmia, which is about as logical as if one were to say that because the Mississippi, overflowing its banks, causes destruction of crops, *ergo*, all destruction of crops is due to an overflow of the Mississippi! But when our author comes down, by exclusion, to the cellular basis of epilepsy, he loses his balance, and falls over into that metaphysico-materialistic mode of thought of which Dr. Hughlings-Jackson is the fashion-letter in England. Dr. Gowers writes: "The state of a nerve-cell, whether at rest or in action, may be regarded as depending on the proportion which its tendency to liberate energy bears to the resistance within it. The action of a nerve-cell may depend on the production of force within it being increased in excess of the resistance, or on the resistance being unduly lessened. The cessation of its action may depend on the tendency to liberate energy being diminished, or on the resistance

being increased." The hypothesis of two things within a cell, yet distinct from that cell's matter, is certainly unwarrantable in the light of our knowledge of cellular action. It is much the same mental tendency that gave birth to the Archæus or demon of the Schoolmen, who, propitiated, inspissated the humors with the milk of human kindness, and when angry sent out a horde of little devils to irritate the tissues. Compare this with Herbert Spencer's explanation of nerve-action by an assumption of isomeric changes, and the illustration of his meaning by instancing the changes that electro-deposited antimony will undergo—how the latter is found in two forms, one dark, amorphous, the other gray, crystalline; how when a mass of dark, amorphous variety is disturbed at one end, as by the tap of a hammer, a hot body, an electric spark, a temperature below that of boiling water, a change at once begins into the crystalline antimony, and spreads rapidly throughout the whole mass—and the difference between the two modes of thought is seen to be enormous. One belongs to a by-gone day; the other is alertly abreast of the science of our day. Molecular changes lie at the bottom of cellular action, and we can get no nearer to them at present than by some hypothesis, based on flat materialism, of some such nature as Herbert Spencer's.

The chapter on treatment contains two new items, viz., the use of borax, and what is known as the *maximum dose treatment* in such cases as have been favorably influenced by moderate doses of the bromides.

Take it all in all, the work is a good one for those who desire an accurate presentation of our existing knowledge of epilepsy and some allied affections.

A Treatise on the Diseases of the Nervous System. By James Ross, M.D. In two volumes. J. & A. Churchill, London, 1881.

The lectures published a few years since, in the *Medical Times and Gazette*, by Dr. Ross, on the anatomy of the nervous system were so excellent that, when this treatise was announced, the reviewer was anxious to obtain it, believing that the work would be a good one, and he can certainly say that he has not been disappointed in his expectations as to its worth.

It is encyclopedic in its information. Superficial critics have referred to it as a compilation, and of necessity any treatise pretending to consider the anatomy, physiology, and the diseases of

the nervous system must be to a great extent a compilation, since so much work has been done in the last few years in this special province by many workers. Dr. Ross, however, has thoroughly digested the information which he presents to the profession, and has added to it much original matter, and he has likewise freed himself from the imputation of a simple compiler, which term, it might be said, when great industry is manifest, is no mean designation, by the evidences encountered almost on every page, of his thorough acquaintance with the science of biology and evolution.

In the following review, we cannot pretend to present the essence of the work, although that should be the object of most reviews, and it is the policy of this JOURNAL that it should be, but from the fact that the volumes before us constitute a treatise intended to embrace almost the entire field of neurology, it must be manifestly impossible to do more than to point out why Dr. Ross' work appears to us the most valuable one thus far presented to the profession in the English language, and we must say that, in the limits given to us, even that can be done but imperfectly.

Volume first opens with some well-considered remarks on the conservation of energy; the fundamental properties of living matter; on cell structure; on assimilation and disassimilation; on the antagonism between growth, reproduction, and action; the antagonism between the size of units and absorption of nourishment; the differentiation of structure and the specialization of function; the integration of structure and the passage from the general to the special in both structure and function. The anatomy and physiology of the ganglion-cells and nerve-fibres are well presented, and then the laws of irritability, conduction, and stimuli are discussed. A general theory of nerve-functions, the construction of the nervous tissue, and the construction of a nervous system are set forth, and in this he follows closely the teachings of Meynert.

One of the few criticisms that we are disposed to make is, the adoption of Hughlings Jackson's application of Herbert Spencer's hypothesis as to the function of the cerebellum. It appears to us that, with our present knowledge, we are not warranted in attributing to the cerebellum any such active participation in the control of the motor mechanism of the body as this view necessitates. Briefly the view is this, that the cerebellum presides over all muscular contractions necessary for the maintenance of all our attitudes in space, while the cerebrum regulates the contractions necessary to effect all the changes of attitude which are made in response to the successive impressions occurring in time. This

view can be made most clear by supposing some mechanism which represents to us the human body, in which the centre of gravity is so adjusted or so under the control of some controlling centre, that no matter what movement be made by another force which, though constantly exerted, is exerted at some times more than another, it will always retain its centre of gravity and equilibrium. Supposing that this opposing force be withdrawn, the mechanism at once becomes rigid. It has lost the antagonizing force which prevented the appearance of fixedness or rigidity, and which also had a plus quality which produced movement. In support of this view are adduced the cases of so-called "cerebellar rigidity" and "cerebellar tetanic seizures." It seems to us, notwithstanding our high regard for the authors of this view, that it is not warranted by the anatomical and physiological knowledge to date. The view presented under head 4 in anatomical contributions in the February number of this JOURNAL appears to us to be the correct one, namely, the cerebellum . . . "assumes the position of an informing depot to the great head-centre, the cerebrum. . . . The cerebellum is not the centre for, but the informing depot of, the finer co-ordinations engaged in maintaining the equilibrium. . . . Whatever molecular oscillations are determined within its ganglionic substances, these must pass to the higher centres for translation to skilled motor reaction."

The distinction of a fundamental and an accessory nervous system is well brought out. The fundamental constituting that portion which man possesses in common with the lower animals and which is well developed in the human embryo at nine months. The parts which differentiate the nervous system of man from that of the lower animals, which is found in the embryo, exist only in an embryonic state, and are termed the accessory portions and become superadded after birth; the fundamental portions being the least liable to disease as a rule, and the accessory the most vulnerable. In this connection are given excellent expositions of the laws of evolution and of dissolution.

The general etiology and symptomatology of the nervous system are well presented, and a special consideration is given to the sensory, motor, and trophic troubles under the respective heads æsthesioneuroses, kinesioneuroses (embracing external visceral and vascular), and trophoneuroses.

The general morbid anatomy and physiology; and the general diagnosis and prognosis; and general treatment of nervous affections in general are well given.

The second part of volume first embraces the diseases of the

peripheral nerves and the diseases of the sympathetic nervous system and are well considered, and abundant illustrations assist the text.

The second volume is very much larger than the first. It begins with a most excellent and complete description of the anatomy of the spinal cord and medulla oblongata—the most complete that we know of in the English language. In the account of the accessory functions of the spinal cord and medulla oblongata, page 71, one appreciates the erudition and originality of the author. Moreover, in this introduction all additions to our knowledge on the subject are included up to date. On page 83, in discussing the function of the pyramidal tract, he contributes an explanation of the presence of the direct pyramidal tract-column of Türck and of a crossed. "The crossed and direct connection which this tract forms between the cortex of the brain and the gray anterior horns is rendered necessary by the fact, that every movement of the one side of the body alters the centre of gravity and necessitates a new adjustment of the opposite side. I obtained this idea in a conversation with Dr. Hughlings-Jackson and he illustrated his meaning by showing that when a man stands on the ball of the right foot and stretches his arm upwards and forwards to reach an object, the body being also inclined forwards, the left leg is instinctively thrust backwards and the arm downwards and backwards in order to keep the centre of gravity as far back as possible, and so to prevent the line of gravity from passing in front of the ball of the right foot. The muscular contractions of the right side of the body may be supposed to be regulated in this action from the left cortex of the brain through the fibres of the pyramidal tract of the lateral column of the right side, while the movements of the left arm and leg are also regulated from the left cortex, but the impulses are conveyed to the same side of the cord and of the body by the fibres of the column of Türck."

The internal structure of the cerebrum, pages 448–468, is described very intelligently, and we believe that it is the best description given in English up to the present. A very good account of the development of the brain is also given, pp. 468–473. The functions of the encephalon are fully discussed, beginning with the functions of the basal ganglia, the functions of the cortex of the cerebrum with the classification of the psychical states, the anatomical substratum of consciousness, and a very careful and thorough review of the experimental determination of the functions of the cortex of the brain.

The morbid anatomy and the classification of the diseases of the encephalon is then considered at great length. There is not of necessity much that is novel for one to criticise or mention in this part of the treatise, but we would especially commend all of that part devoted to the consideration of focal diseases according to the localization of the lesion, by reason of the great clearness, system, as well as erudition shown in the treatment of the subject —the section on affections of speech from cortical diseases is especially worthy of mention; on intra-cranial tumors, and on affections of the peduncular tracts.

As far as we know, Dr. Ross has been the first to well analyze the hemiplegic gait, and we therefore give it in his words. "When the muscles of the paralyzed lower extremity have acquired a certain degree of rigidity, the patient is able to walk by the aid of a stick, even if the voluntary paralysis of the affected side remains complete. The patient leans toward the healthy side, but is prevented from falling over to that side by the support of the stick; the pelvis and hip-joint of the paralyzed side are elevated by the contraction of the abductors of the opposite thigh, so that the weight is taken off the paralyzed extremity. When the paralyzed lower extremity, say the right leg, is the active one, the line of gravity is carried over to a slight extent to that side; but instead of reaching the centre of the paralyzed foot, it remains midway between it and the end of the stick, so that the weight of the body is maintained partly by the paralyzed lower extremity and partly by the healthy arm through the stick. The healthy or left lower extremity is now quickly moved forwards a step, an unusual degree of flexion of the thigh upon the body taking place in order to avoid the necessity of carrying the line of gravity too far to the paralyzed side. The left leg now becomes active, and the paralyzed one must be moved forwards. The manner in which this movement is executed depends upon the degree of paralysis and of muscular rigidity present. If the paralysis be almost complete and the rigidity not great, the extremity is partly swung and partly dragged round mainly by the contraction of the inward rotators of the healthy limb. Contraction of these muscles causes the pelvis to rotate forwards on the hip-joint of the healthy side, and consequently the opposite hip-joint, dragging after it the paralyzed leg, is moved forwards. The forward movement is aided by a further elevation of the right hip-joint caused by contraction of the abductors of the opposite thigh, and sometimes by a slight backward inclination of the trunk, by means of which the

distance between the points of origin and insertion of the flexors of the thigh is increased."

We have endeavored to present some evidences of the value of this treatise, but however imperfectly the duty has been done, we feel sure that any one who reads the volumes will agree with us in stating that, at the present time, there exists no other treatise the equal of it.

SOCIETY PROCEEDINGS.

PROCEEDINGS OF THE NEW YORK NEUROLOGICAL SOCIETY.

Seventy-fourth Meeting, Feb. 7th 1882.

THE meeting was called to order at twenty minuter after eight by Dr. L. C. Gray, the first Vice-President, who occupied the Chair. There were present Drs. Bowditch Morton, Wm. Hammond, Beard, Dwinelle, Spitzka, Wm. J. Morton, Farrington, Harwood, Dana, M. J. B. Messemer, Wyeth, and about fifteen others. The minutes of the preceding meeting were approved. The council reported favorably on the candidacy of Drs. A. H. P. Leuf, J. S. Woodside, and M. J. B. Messemer. Drs. L. Putzel and E. W. Burnett, who had been favorably reported on at the last meeting, were elected by the vote of the Recording Secretary, cast on the order of the Society after motion of Dr. Spitzka.

The Secretary called attention to a letter addressed him by the trustees of the Academy of Medicine, informing him that the rent for the monthly use of the parlor occupied by the Society would be raised to ten dollars. Dr. Spitzka thought that the simplest way would be to submit to the terms imposed, and moved that they be accepted. The motion was seconded by Dr. Dwinelle. Dr. Harwood asked whether, as the notice bore the date of January 26th, 1882, the new terms dictated held for the present meeting. He did not believe that they could so hold, as the Society had not received due notice. Dr. Spitzka amended his previous motion, so that it read: "and that the Treasurer shall shall have full power to make special arrangements for the present meeting." The amendment being accepted by Dr. Dwinelle, the motion as amended was carried.

Dr. Hammond called the attention of the Society to the death of its honorary member, Dr. Brierre de Boismont, of France.

The paper of the evening, entitled: "Contribution to Nerve Stretching in Spastic Spinal Paralysis, in Paralysis Agitans, in Athetosis, in Chronic Transverse Myelitis, in Sciatica, and in Reflex Epilepsy" was then read by Dr. Wm. J. Morton. The subject was opened by the statement that, in view of the unfixed position of nerve-stretching as a therapeutic procedure, any contribution to the subject in the shape of cases in which the operation had been tried, was of value. Of no therapeutic measure was the physiology so ill understood, the pathological evidence so vague and so conflicting as this one. To this was to be added the inconstancy of the methods of operation employed; while some really stretched the nerve, others did so imperfectly, or used clumsy instruments, whose employment led to a crushing or other injury of the nerve-trunk. The bulk of the paper consisted of a series of case accounts.[1]

The reader concluded with some general remarks concerning the observations of others, and called attention to the difference in appearance of various sciatic nerves. In sciatica, the nerve was found congested; in locomotor ataxia, of a clean white color; in the case of paralysis agitans, the observation of Parkinson had been confirmed, the nerve being clearly sclerotic, and in the case of myelitis described, the nerve was wasted and grayish in color.

The discussion was opened by Dr. Hammond, who called the attention of the Chair to the presence of Dr. Wyeth. The latter being invited to speak, detailed the case of a patient at the Mt. Sinai Hospital, a tabetic, in whom both nerves were stretched on account of the lancinating pains. The right nerve was stretched most. The pains remained absent for three months on the right, and for ten days on the left side. The patient stated that, if the pains increased in severity, he would have the nerve stretched again. On being interpellated as to the gait of the patient, Dr. Wyeth stated that he did not believe there was any improvement, though the patient thought there was a slight change for the better. He stated further that Dr. Gerster had had a similar case.

Dr. Gerster being invited to take the floor, proceeded to read his remarks from a paper. The case account thus read appeared to relate to a tabetic, in whom no improvement was observed by nerve-stretching.

Dr. Beard asked Dr. Morton whether the operation had ever been tried in writer's cramp; Dr. Morton knew of no such case;

[1] More fully noticed in the report on progress in therapeutics.

Dr. Beard thought that on *à priori* grounds it should be tried. Dr. Hammond then referred to a case of locomotor ataxia in which he had stretched the nerve on both sides without any result whatever. In cases of sciatica, he had operated with immediate relief. He had seen the patient suffering from spastic paralysis, operated on by Dr. Morton, and confirmed the claim of the latter, to having affected great improvement. He understood that the patient was present, and hoped the members would have an opportunity of examining him. Dr. Morton exhibited the patient to the Society. The patellar reflex was found exaggerated somewhat, and the patient had a shuffling and rather spastic walk. But he stated that his troubles did not remotely compare with those he had suffered from before the operation.

Dr. Wm. Thomson was called on, but stated that he had no knowledge of the subject

Dr. Dana, referring to a quotation by Dr. Morton, of the statements of a French observer that the medulla moved during nerve-stretching in animals, related his experiments with a pup. He exposed successively the brain, the oblongata, and the cord, even going the length of separating many of the natural attachments, but though tugging with all his might at both exposed sciatics, he was unable to appreciate any movement of the nerve-centres.

Dr. Hammond did not believe that that was the real question at issue in the operation, a mechanical influence on the minute elements of the cord of ever so subtle a character would suffice to account for the influence of the operation. Dr. Dana rejoined that he had watched the cut surface of the cord, but had equally failed to see movements there. Dr. Hammond reiterated that this did not conflict with his supposition, he repudiated a coarse movement.

Dr. Wyeth asked whether any member present could inform him as to the rate of mortality from the operation. Dr. Hammond stated that one patient in Europe had died of pyæmia; none of his had had any bad results. Dr. Spitzka here interposed, adding that another death from pyæmia, consequent upon the operation, had been reported by Fenger, of Chicago, and he would call attention to the, from any point of view, disastrous case mentioned by Westphal, of acute myelitis following the operation. It seemed to him this case settled the fact that the operation could affect the cord, after a fashion, and favored the conclusions of Dr. Hammond regarding a molecular influence.

Dr. Morton stated that he had collected in all, five cases fol-

lowed by a fatal issue; in two, and in the case mentioned by Dr. Spitzka, this termination was really due to the operation, in the others not directly attributable to the latter alone.

The Society then adjourned at half-past ten.

Seventy-Fifth Meeting, March 8th, 1882.

The Society was called to order at nine o'clock, the President, Dr. T. A. McBride, occupying the chair. There were present Drs. Wm. Hammond, L. C. Gray, Putnam Jacobi, Beard, Harwood, Graeme Hammond, Bowditch Morton, Farrington, Putzel, F. A. McGuire, Spitzka, Birdsall, Troutmann, Dana, Gibney, and C. S. Wood. The minutes of the preceding meeting were read and approved. Drs. M. J. B. Messemer, A. H. P. Leuf, and Woodside, who had been recommended for membership at the previous meeting, were hereupon elected by the ballot of the Secretary, cast on motion of Dr. Spitzka, seconded by Dr. Gray.

The paper of the evening, entitled "A Contribution to the Pathological Anatomy of Lead Paralysis" was then read by Dr. W. R. Birdsall.[1]

The discussion was opened by Dr. E. C. Spitzka, who, after some preliminary questions, answered by Dr. Birdsall, and an examination of the microscopic specimens exhibited, stated that, in his opinion, there was evidence of atrophy similar to that found in cases of paretic dementia in the external group of cells referred to by the reader. This seemed to him so far confirmatory of a view he had advanced some years ago, concerning the localization of muscular innervation in special cell-groups of the spinal gray. He would briefly state that, on the basis of embryological and comparative anatomical facts, he believed that the cell-groups corresponding to the extensors and dorsal muscles lay further outward and backward than those corresponding to the ventral and flexor ones. As to the existence of myelitis, he could not satisfy himself; the margins of the gaps in the specimen showed no appearance indicating a pathological softening, while everything seemed to point to a merely cadaveric change. There was a single cell in one specimen which might be utilized to support the diagnosis of subacute myelitis, but without further evidence he did not consider that view established. In his opinion, the darker color of the columns of Goll was nothing but a normal one, those columns always staining deeper with chromic salts and carmine than the others.

[1] See the original department of this issue.

Dr. M. P. Jacobi made some remarks in relation to the action of metallic poisons on the circulation, and the question whether the metallic poisons acted on the centre primarily or not. The doctor also asked whether any lead was found in the intestines.

Dr. Birdsall replied to the various questions and contradictions by stating that, while the nerve-cell atrophy was most marked in the special group referred to, it seemed to be, though less intense, present in other groups also. He thought a careful examination of all the specimens, including those not under the microscope, would convince Dr. Spitzka that myelitis of a slight grade was present. He based the diagnosis on the greater number of lymphoid elements, the greater vascularity, and in the case of the columns of Goll, on the greater thickness of the connective tissue septa. That the columns of Goll normally took staining more deeply than those of Burdach he was aware. As to the questions of Dr. Putnam Jacobi, he had distinctly explained why the autopsy in certain respects was necessarily imperfect, and that, owing to his being interrupted in the autopsy, the viscera could not be obtained for microscopical examination.

Dr. Spitzka called the attention of the reader to the fact that an American observer, Dr. J. J. Mason, had tried his best to saturate frogs with lead for many months, and had in his unquestionably carefully and beautifully prepared specimens been unable to discover any changes in the nerve-cells.

Dr. Birdsall stated that he had not referred to Mason's findings, because the Germans had questioned their reliability. He forgot who had particularly objected to them. Dr. Spitzka replied that it was Erb, to the best of his knowledge, but Dr. Mason had since again written on the subject, and cautioned investigators not to expect a typical saturnine paralysis as in man, in frogs. It seemed that the heart was more apt to be affected than the voluntary muscles in these animals.

The brief discussion being closed, the next business declared in order was the nomination of officers for the ensuing year.

There were nominated for the Presidency: Drs. L. C. Gray (by Dr. Spitzka), Wm. J. Morton (by Dr. Beard), Wm. R. Birdsall (by Dr. Farrington), and E. C. Spitzka (by Dr. Wm. Hammond); Drs. Birdsall and Spitzka declined. For First Vice-President, Drs. M. P. Jacobi, Wm. J. Morton, and E. C. Spitzka were nominated, and for Second Vice-President Drs. V. P. Gibney and Rockwell, of whom the former declined. The sole nominees for the positions of Recording Secretary, Corresponding Secretary, and Treasurer were, respectively, Drs. Graeme Hammond, Put-

nam Jacobi, and E. C. Harwood. The following were nominated for the position of Councillors: Drs. Wm. A. Hammond, T. A. McBride, G. M. Beard, Wm. R. Birdsall, E. C. Spitzka, E. C. Seguin, and C. L. Dana.

Dr. Hammond was then called on by the Presidect to report on the incorporation of the Society, with which business he had been charged as a committee of one. Owing to a misunderstanding in regard to his instructions, Dr. Hammond was only able to report progress, but intimated that under the interpretation given to the original motion of Dr. Spitzka, the matter would now be speedily attended to.

Dr. Hammond then moved that, inasmuch as the Committee of the Senate which had been appointed to investigate asylums in the State had made a very able report, sustaining the position of the Society, and expressly stating that the agitation of the subject by the N. Y. Neurological Society had been the starting-point of the inquiry, and because, in view of the vilification of the Society by various parties, the action of the Senate Committee was really a triumph for the Society, that the Society's Committee on Asylum Abuses be instructed to take official notice of the matter, and to report on the same.

The motion was unanimously carried, and the Society then adjourned at about eleven o'clock.

Seventy-Sixth Meeting, April 4th, 1882.

The Society was called to order promptly at eight o'clock by the President, Dr. T. A. McBride. There were present Drs. Burnett, Corning, Dixon, Farrington, L. C. Gray, G. M. Hammond, Wm. A. Hammond, Hardy, Harwood, Leuf, E. J. Messemer, M. J. B. Messemer, Spitzka, Stevenson, Wagner, Weber, Woodside, Goodwillie, Wm. J. Morton, B. Morton, Gunning, Amidon, Ball, Beard, Birdsall, Dana, Dwinelle, Gibney, Kinnicutt, Peters, Putzel, Schaffer, Seguin, Shaw, R. W. Taylor. The minutes of the preceding meeting were read and approved, after some slight corrections of the list of nominees had been made. The treasurer, Dr. E. C. Harwood, read his annual report. The chief features of the same were the statement that on April 1st, 1881, the Society had been in debt to the treasurer to the amount of $45.12; since then the expenditure had been to date $160.95; the receipts during the same period had been $338.85; there was therefore a balance in the treasury of $132.39. The report was accepted and placed on file. The election being declared in order,

some discussion arose as to the mode of procedure. Dr. Seguin moved that each candidate be voted for separately and by ballot; the motion was carried. Further discussion occurred between Drs. Seguin and Shaw on the one hand and Dr. Hammond on the other. The former members maintained that, according to the constitution and by-laws, no candidate not on the printed list of nominees could be elected; Dr. Hammond showed that the language of the by-laws could not bear such an interpretation, and that there was nothing in the constitution and by-laws to prevent a member from voting for any candidate eligible for office. Dr. Seguin proceeded to cite the ruling of the Academy of Medicine, but Dr. Hammond reminded him that it was precisely because we were bound by our own rules and not by those of another society, that the position of the two gentlemen was not sound. Then Dr. Spitzka moved, that, in order to bring the opinion of the Society to the test of a vote, it be resolved that members be at liberty to vote for whom they chose, and that the member receiving a majority vote for any office shall be declared elected. The motion was carried by a vote of seventeen to fourteen. The election of the President being declared in order, Dr. L. C. Gray rose to decline in favor of Dr. Spitzka, declaring that he thought as an old and active member of the Society, and the one who had initiated the movement for asylum reform within the Society, a movement that had so recently redounded in the Society's favor, he deserved the honor of the presidency. Dr. Wm. J. Morton, the other nominee on the printed list, also declined in favor of Dr. Spitzka. Dr. Harwood rose and moved, that inasmuch as all the candidates nominated had declined in favor of Dr. Spitzka, the Secretary be directed to cast the vote for him. Dr. Seguin protested and nominated Dr. Birdsall. The ballot was taken and failed to result in an election, owing to the deposit of scattering and blank votes. A second ballot resulted in a majority vote for Dr. Spitzka, who was thereupon declared elected. Before the vote for first vice-president was taken, Dr. Spitzka, one of the nominees, withdrew, as he was already an officer for the ensuing year; a second ballot was taken, the first one having failed to result in an election, owing to a number of votes being cast for Drs. Gray and Birdsall. Dr. Gray stated that he was not a candidate, and the second ballot resulted in the election of Dr. Wm. J. Morton. On motion, the recording secretary cast the vote of the Society for Drs. Rockwell, Graeme Hammond, M. P. Jacobi, and Harwood, as second vice-president, recording and corresponding secretaries, and treasurer respectively. The vote for councillors resulted in the elec-

tion of four of the five members requisite, these were Drs. McBride, Birdsall, Seguin and Dana; of the other candidates none received a majority on either the first, second, third, or fourth ballots taken; a fifth ballot resulted in the election of Dr. L. C. Gray.

The Society adjourned at half-past ten o'clock.

PROCEEDINGS OF THE NEW YORK MEDICO-LEGAL SOCIETY.

One Hundred and Seventy-eighth Meeting, February 1st, 1882.

A REGULAR meeting of the New York Medico-legal Society, which partook somewhat of the nature of an anniversary meeting, owing to the postponement to this occasion of the addresses of the retiring and incoming presidents, was called to order in the lesser hall of the New York Academy of Medicine, at half-past eight on the above date. The minutes of the last meeting being read and approved, the following candidates for membership, recommended by the Executive Committee, were elected: John A. Deady, E. J. McIntyre, D. Clark Briggs, C. S. Hatch, E. M. Fell, E. C. Howard, M.D., Fordyce Barker, M.D., F. P. Foster, M.D., J. W. Wright, M.D., C. L. Dana, M.D., Stephen Smith, M.D.

A minority report of the Committee on Contested Elections, and signed by Dr. Walter G. Fleming,[1] was read, and the Society immediately passed to the discussion of the majority report, which was signed by the Hon. Amos G. Hull and the Hon. G. A. Yeaman, read by the latter, and which was adopted. Its purport was that the contestants had no substantial grounds for complaint, and that the force of the technical obstacles raised against the installation of the president and several officers-elect was broken by a due consideration of the by-laws. In the course of the discussion, the Hon. D. C. Calvin stated that, while still holding to his original view, that a technical error had been committed, he would recommend the adoption of the majority report. Dr. Harwood protested on the ground that the question of illegal voting had not been considered by the committee. The protest was tabled for the time being.

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[1] In the report of the previous meeting, the name of Dr. Wm. A. Hammond was erroneously given, instead of that of Dr. Walter G. Fleming, as a member of the Committee on Contested Elections.

As there was no report by the Permanent Commission, Dr. C. S. Wood delivered his address as retiring president, briefly recapitulating the work done during the two years in which he had presided over the Society. Among the important topics discussed was the incarceration of persons in unconscious states in prisons. Great mischief had been done in numerous and specifiable cases by ignorant policemen, who, diagnosticating every unconscious person to be intoxicated, cast persons suffering from fracture of the skull and coma, due to various causes, into cells in which they usually died before morning. It might be reasonably asked that some medical supervision and discrimination be exercised here. Another important question was that relating to the abolition of the present coroner's inquest law. It appeared to be the unanimous sense of the Society that our present system was in the highest degree imperfect, and there were grounds for the belief that the action of the Society would influence the legislature to institute a reform. Dr. J. H. Packard, of Philadelphia, had brought before them the question of capital punishment, and defended the introduction of a new mode of execution, painless, and devoid of the repulsive features attaching to hanging, namely, suffocation by carbonic oxide gas. In connection with the discussion of this paper, the Society had substantially expressed itself against the abolition of the death penalty. The various problems connected with the question of insanity had taken up much of the time of the Society. Fine-spun theories were being invented to account for crime, "moral insanity" was nothing but an excuse for crime; all kinds of insanity were devised to excuse stealing and incendiarism, but it was safe to say that the acceptation of the "right and wrong" test would dispose of these vagaries! It seemed to be settled that no insane mind could exist in a healthy body, and hence the expert of the future would lay the chief stress on a careful physical examination before he pronounced a criminal insane. The speaker referred especially to the Guiteau trial, and read an extract from a daily paper, which was to the effect that experts willing to go for the defense at hundreds of dollars a day were responsible for Guiteau's crime, and the speaker dilated considerably on the corruption obtaining among experts, as exemplified among the experts for the defense. A very important measure had been suggested by Dr. C. A. Doremus, relative to the licensing of embalmers. This was deemed a timely measure, since, in case of poisoning with arsenic, the conclusiveness of toxicological findings could be impeached because of the notorious use by embalmers of arsenic as a preservative. The

question of trance in its medico-legal relations had been extensively discussed, but the views of members of the Society had not been favorable to the propositions advanced, and it did not appear that the verdict of the scientific world at large differed from that of the Society. In concluding his address, the retiring president referred to the growing interest in medical jurisprudence, as evidenced in the formation of two new medico-legal societies, one at Binghamton, N. Y., another at Hartford, Ct., as well as a medico-legal section of the Kings County Society in Brooklyn, within the year passed.

Dr. Leale occupied the chair during the latter part of the address.

At the conclusion of these remarks, Dr. Spitzka rose and stated that, having had the "misfortune" to be compelled to go as a witness for the defense in the Guiteau trial, he rose to a question of high privilege. He did not believe that the Society proposed that a false inuendo should pass into its minutes, and trusted that the speaker would not knowingly cast an incorrect aspersion, but so long as it were true that there was at least one expert medical witness who pronounced Guiteau insane, and who, if he had accommodated himself to other convictions, could have appeared for the prosecution which was the "paying and the popular side," the slur thrown on the experts for the defense was mendacious, even were there no other grounds for declaring it so. He protested against the passing of such a slur into the record of the Society as, under the circumstances of the case, not only an improper, but also a false one.

Dr. Sayre rose and suggested that the passage in question be stricken out, especially as it rested on a newspaper quotation. The Hon. W. P. Willis doubted whether a retiring officer could be dictated to. The Hon. D. C. Calvin indorsed Dr. Sayre's suggestion, and did not think it reflected credit on the medical profession to quote articles written by some penny-a-liner. Dr. C. S. Wood expressed his regret that the passage could be construed as reflecting on anybody, particularly as he had not had the remotest intention of reflecting on Dr. Spitzka.

Mr. Clark Bell, passing over this matter, on which no action was taken, then read his inaugural address which, in its abbreviated form, consisted chiefly of well-timed recommendations. He believed that more attention should be devoted to the library, that members should commit themselves to furnishing either a volume or its financial equivalent to the library annually, and that other libraries should be appealed to for exchanges and other assist-

ance. In speaking of the unsatisfactory condition of the library, he stated that he had been unable to obtain an account of the present state of the library from the librarian. He recommended further the abolition of the monthly publication, known as the *Bulletin*, which had been a source of expense and had failed to accomplish its objects. He had had offers from the *Daily Register* (law journal) and the *New York Medical Journal* to publish the furnished reports of the meetings. An additional offer had been made by Dr. Bell, of the *Sanitarian*, offering to publish the Society proceedings and to furnish reprints at a nominal cost to members. It was also believed by the speaker that more special work might be relegated to committees than had hitherto been done, and even sections might be instituted, the results of whose labors could be reported at the regular meetings of the Society. The speaker dilated at some length on the question of expert evidence in the courts of law, and instanced the great excitement, not only in legal and medical circles, but also in the public mind, created by the expert evidence in the Guiteau trial. He did not think that the verdict of the jury settled the question of insanity, or even of responsibility. It was true that their verdict probably gave universal satisfaction, but that did not alter the fact that a reliable conclusion as to the mooted points referred to was a desideratum. The President thought that this case, and the defects in our expert system it brought out so prominently, would lead to a reform. Such a case as that of Guiteau should be examined by experts of the calibre of a Casper or Riehl before even being brought to trial.

An important field for inquiry was the sanitary reform of our public schools. The position of the Society on this question, blindly opposed by the Board of Education, had received the indorsement of the *New York Medical Record*, and it was clear that the Society stood committed to its record and to the bringing of the question to a satisfactory conclusion.

Mr. Max F. Eller rose to a correction; he had not refused to give information as librarian to Mr. Bell.

Mr. Bell rejoined by reading portions of the passage objected to, and disclaimed any intention of reflecting on the librarian, whose inability to give the required information did not appear to be his fault.

After a protracted and animated discussion, the recommendation of the inaugural address, relating to the suspension of the Bulletin, was adopted, with the modification that so much of it as might be necessary to complete the publication of Dr. Johnson's

paper and its discussion be continued. On motion of Dr. Hammond, the other suggestions were referred to the Executive Committee.

Dr. Leale, the elected First Vice-President of the Society, resigning his position as trustee, and that resignation being accepted, Drs. Sayre and Johnson were nominated to fill the vacancy. Dr. Sayre declining in favor of Dr. Johnson, the Chair asked him to serve, and on Dr. Johnson's seconding the Chair and declining in favor of Dr. Sayre, a motion ordering the Secretary to cast the ballot of the Society for Dr. Sayre was unanimously carried and he was declared elected.

A vacancy on the Permanent Commission, created by the resignation of Dr. Frank Hamilton, was next announced. Drs. Parsons, Johnson, Finnel, and Spitzka were put in nomination. The first ballot did not result in an election, and a second ballot was taken, the names of Drs. Parsons and Johnson who had received the lowest number of votes being omitted. Of thirty-three votes cast, the tellers reported that Dr. Spitzka received twenty-two and Dr. Finnel eleven, Dr. Spitzka was therefore declared elected. Dr. Frank H. Hamilton's resignation as an active member of the Society was then accepted, and on motion the Secretary cast the vote of the Society for the doctor electing him an honorary member.

A protest was now submitted, or rather taken off the table and placed on file, by Dr. E. C. Harwood. As the doctor made charges that illegal votes had been cast, a very sharp discussion ensued, which was finally brought to an amicable end by the Chair, and it appearing that Dr. Harwood had merely taken the ground that votes cast under the new order of the Executive Committee were illegal, because the action of the Committee was not in pursuance of previous order of the Society, Mr. Riddle made the motion that the action of the Executive Committee be sanctioned by the Society. This motion was carried, and the questions arising out of the various protests definitively settled.

The Society adjourned at a quarter of twelve.

One Hundred and Seventy-ninth Meeting, March 1st, 1882.

This meeting was one of unusual interest, and so well attended that, as the lesser hall of the Academy of Medicine was found far too small for the occasion, the Society adjourned to the larger hall on motion of Dr. L. A. Sayre. The President opened the meeting by stating that in view of the important paper to be read that

evening, and the equally important discussion of Dr. Johnson's paper, the reading of the minutes would be deferred unless there was an objection.

The Assistant Secretary read a communication from Dr. Wells, who offered his resignation as Secretary of the Society. Messrs. Eller and Riddle, and Drs. Leale and Finnell delivered eulogies on the Secretary and sustained the motion of the first-named gentleman, that the resignation be not accepted. Mr. Calvin did not see how such a motion could be offered, inasmuch as it was the right of any officer to resign, if he saw fit, and not to accept his resignation under those circumstances would be doing him scant justice; he therefore moved a substitute of the motion to the effect that the Assistant Secretary be instructed to confer with Dr. Wells and to express the unanimous sense of the Society that Dr. Wells retain his office. Mr. Eller withdrawing his motion, the substitute was carried. The Executive Committee then reported the following gentlemen as recommended for membership: George P. Avery, Leicester P. Holmes, Gilbert R. Hawes, Graeme M. Hammond, M.D., Solomon Kohn, E. B. Merrill, Fred. G. Smedley, S. B. Livingston, Dr. N. E. Brill, Dr. J. J. Henna, Dr. Fred. A. Lyons, James Beck Clark, Jacob B. Berg, Dr. J. W. S. Arnold. On motion, the Assistant Secretary cast the vote of the Society in their favor.

The Committee on Library made a preliminary report, which was adopted, and on motion, the following resolutions, recommended by that committee, were unanimously adopted, on motion of Mr. Hull: That the Library Committee be authorized and empowered to make exchanges of all our publications not needed in the library, and of all the copies of "Bulletin" not sent to members, and duplicate volumes presented for other pamphlets or books, on such terms as that committee shall deem to be for the best interests of the Society and the growth and success of its library. 2. That all contributions to the library fund be kept by the treasurer of the Library Committee separate and distinct from the funds of the Society, and be at the disposal of the Library Committee and used for the purchase of books, pamphlets, and library fixtures and furniture and the preservation thereof. 3. That the President of the Society or the chairman of the Library Committee write the name of every donor in each volume presented to the library. 4. That if cash contributions are made by members or donors, the name of the donors be written in the volumes purchased out of the said contributions in each case. 5. That the Library Committee be authorized to spend all neces-

sary sums for postage, stationery, and printing circulars, lists, etc., in the discharge of their duty. 6. That the Library Committee be instructed to issue an appeal and send it to the two professions and to librarians throughout the world, soliciting subscriptions, donations, and exchanges. 7. That each member of the Society be requested to sign the agreement to contribute one volume upon medical jurisprudence to the library in each year or its equivalent in cash or pamphlets.

On unanimous recommendation of the Executive Committee, the following resolutions were adopted, on motion of Dr. Hammond:

Resolved, That this Society, in the interests of legal medicine and the science of medical jurisprudence, requests members of both houses of Congress to favor the proposed legislation authorizing the construction of a fire-proof building for the library collected in the office of the Surgeon-General of the Army of the United States, the loss of which would be a great public calamity, and which is at present unprotected against fire.

Resolved, That a committee be appointed to carefully consider and report what changes of the existing laws are necessary in regard to evidence of "experts," and of expert testimony in criminal trials where the defence of insanity is interposed, as well as the proper methods of determining who are competent experts in such cases, how they shall be chosen, and by whom compensated.

The Committees on Entertainments reported the success of the annnual dinners and that the expense therefor did not fall on the Society, but had been met by subscription. All these reports were adopted. The report of the Permanent Commission being called for, Dr. Spitzka reported verbally that the Commission had formally organized, electing Mr. Clark Bell chairman, and himself secretary.

The "Committee on Coroners" reported progress through Mr. Delano C. Calvin, who stated that, as the legislature was near its adjournment, and premature action was not desirable, it seemed best to the committee to take more time and to draft a careful and sound law. The Chairman of the Committee on the Constitution and By-laws reported that the committee had not yet organized, and Dr. O'Sullivan reported on behalf of the Committee on the Sanitary Supervision of Schools that it had no report to make.

Meanwhile the audience had increased to over four hundred persons, every available spot in the hall being occupied, and a large number of distinguished physicians, lawyers, and laymen were noted among those present. The paper of the evening, enti-

tled "Reasoning Mania, its Medical and Medico-Legal Relations, with Special Reference to the Case of Charles J. Guiteau," was attentively listened to. The reader, Dr. Wm. A. Hammond, opened with a brief historical survey of our knowledge of the subject of reasoning mania. Although it was scarcely possible that so well-marked a mental disorder could have escaped the notice of still earlier observers than Pinel, this alienist was the first to describe the disease (1801), giving an excellent description of several cases, and summing up by saying that this affection may be continuous or characterized by periodical accessions; the perception, judgment, imagination, memory, and understanding are not markedly changed; but there are perversions of the emotional faculties and blind impulsions to the perpetration of acts of violence, or even of sanguinary furor, without its being possible to recognize the existence of any dominant idea or any illusion of the imagination to which the acts in question can be ascribed. In the second edition of his work, Pinel treated more fully of the subject, but did not succeed in getting that full and clear conception of the subject which formed the basis of Esquirol's writings on "Reasoning Monomania," but even he, laying much stress on the change of character, was less accurate than the younger Pinel, who, terming the affection "Mania of Character," describes under it persons who "are turbulent, indocile, quick to anger, committing outrageous acts, which they are always ready to justify by plausible reasons, and who are to their families, their kindred, and their friends constant subjects of anxiety and grief. They are continually doing wrong, either by neglect, by malice, or by wickedness. Incapable of mental or physical application, they destroy and subvert and unsettle everything with which they are brought into contact and which they can injure." Morel adds to a similar description one of the great egotism of these patients, so great that no consequence of their acts, no matter how absurd, can shake their confidence in themselves, and that they are continually considering themselves the victims of misunderstanding or injustice, many of them devote themselves to literary productions of a dreamy, Utopian character, and which exhibit the same shamelessness and eccentricities characterizing their authors. Dagonet finally says, after giving a description similar to that of the previously quoted writer, "with the best intentions, the individual cannot subdue himself or stop his headlong descent along the fatal declivity which leads to disorder." All the eminent alienists who have written in modern times substantiated the description of *manie raisonnante* as first given by the French, and in America

the most distinguished authority, who has followed in their footsteps, is no less a one than Isaac Ray.

Dr. Hammond next proceeded to give a brief but systematic description of the disease as it had been observed by himself and by others. The most prominent characteristic of the disease is an overbearing egotism, he does not hesitate, without commensurate ability, without wealth or influence, and without allowing rebuffs to dismay him, to apply for the highest offices. Any little act of common politeness that may be shown him is at once construed into a promise of assistance. He is invariably sure the appointment is about to be made, and, if finally disappointed, his energies are directed to another and perhaps still higher position. The statement so frequently heard nowadays that such were the characteristics of all office-seekers, Dr. Hammond emphatically denied, and thought such statements were disposed of by the daily observations which those who came in contact with office-seekers had the opportunity of making. Dr. Hammond then related a case of the form of insanity under consideration. A son of a shoe manufacturer refused to give his attention to the business in which his father was attempting to instruct him, and convinced that Nature had intended him for something better, he destroyed a good deal of valuable property, leather and tools, in order to compel his father to abandon the project, and finally succeeded. In telling Dr. Hammond his alleged wrongs, he reasoned with great plausibility, and, with tears in his eyes, wound up a peroration on the subject of his indignities, with the words: "The fact is, that when I went to school, I paid great attention to the study of languages. Now, if I had known that I was going to be a shoemaker, I would have turned my attention to the study of the human foot, and then I should have been qualified to make the best shoes this country has ever seen. I have thought over the matter, and to-morrow I am going to Washington to ask the President to appoint me a Commissioner of Emigration, and send me to all the nations of Europe to see after the emigrants and instruct them in their duties as American citizens. I shall give lectures on the subject in all the principal cities of Great Britain, France, and Germany." On Dr. Hammond asking him whether he understood French or German, he said no, but claimed that he would pick up the former on the steamer going over, and the latter by boarding in a German family. He further admitted that he knew nothing of political economy, and that by instructing emigrants in their duties as American citizens, he meant the distributing among them the Constitution of the United States in

translated form, inasmuch as that document contained the germ of what every American citizen ought to know. Dr. Hammond here interposing that there was not a word about the duties of citizens in the Constitution, he appeared much surprised, but rallying, said that he would supply the omission himself, and hence was just the man for the place. This patient afterwards drew up a petition, and though he did not get a single signature, went to Washington, sought an interview with the President, was brought home by his father, with the aid of the police, and is now an applicant for the command of an ocean steamship.

Such patients were utterly regardless of the feelings and rights of others, everybody and everything had to make way for them, and they often showed positive cruelty in treating those who came in contact with them; this was seen in their conduct with relation to the lower animals very frequently. Believing that services rendered them entitle not the donor to their thanks, but *vice versa*, that they confer a favor by accepting favors, they are ungrateful and arrogant, and at the same time nauseously sycophantic where an object is to be gained. Often recognizing that they are wanting in the very qualities they claim to excel in, they will rant and brag about them, with the purpose of deceiving others, and boast of the achievement when successful. At other times, and quite commonly, these patients will attempt to act the parts of reformers or philanthropists. In this, as Campagne says, they display a degree of energy, activity, and caution which would be really admirable were there any foundation for the alleged mission, but unfortunately taking a figment for a truth, their warefare is waged against windmills. In reasoning, the reasoning maniac acts on assumptions dictated rather by the emotions than the intellect, and the slightest cause suffices to produce an intense degree of excitement, he manifesting his emotional disturbance by loud exclamations, vehement gestures, and the most foul and abusive language; but even when most inflamed, and in the midst of his maledictions, he becomes, under the influence of some different circumstances, good-natured and smiling, and finishes his cursing with a joke or a hearty laugh. Both depth and sincerity might be lacking in his maledictions, and the facility with which reasoning maniacs passed from one state of feeling to another was remarkable. One such a patient in the doctor's experience would, in his presence, declaim in the most vehement manner against his father, accusing him of all the sins in the decalogue, and in the next instant declare that he was only desiring to test his father's patience, and that in reality his father was one of the kindest and

most virtuous of men. But before finishing expressing these opinions, Dr. Hammond caught him making faces and shaking his fist behind his father's back.

Reasoning maniacs, although not subject to morbid and irresistible impulses to commit motiveless crimes, were prone to acts of violence from slight exciting causes. Such acts might be perpetrated both in the heat of passion and, again, after such deliberation as these people were apt to give to any matter. Sometimes their malice was directed against those who they supposed had injured them, against former friends with whom they had quarrelled, or, finally, the crimes might be committed solely for the purpose of gratifying the morbid feelings of pleasure which these lunatics experienced at witnessing the sufferings of others. The lunatic, William Speirs, who, after having been a patient of the Utica Asylum from 1850 to 1856, then discharged by an order of of a justice of the Supreme Court, and employed as a messenger about the building, attempted to destroy the cupola of the asylum by fire in 1857, was in point. This man had been committed to the asylum on the ground of insanity after a trial for arson. He succeeded in burning nearly the entire central building of the asylum on the occasion referred to in 1857, and four days after was detected having set fire to the out-buildings of the same institution, so that in all the man had been guilty of three attempts at arson, all more or less successful. At the trial he confessed as his motive that Dr. Chapin, one of the assistants, had denied him a privilege, while Dr. Gray had taken away his keys. Drs. Day and Dering, of Utica, and Dr. M. H. Ranney, of the Blackwell's Island Asylum, where the prisoner had been an inmate, testified to the prisoner's insanity. The latter was very emphatic as to his declaration of Speir's insanity; among other things, he testified "I discovered no delusion, think he has no uncontrollable impulse; I believe the act resulted from a perverted condition of the several moral faculties of the mind, with a propensity to burn buildings, and a feeble intellect. . . . . Perhaps anything that would excite the prisoner would induce him to burn buildings, or even might stimulate him to commit an assault with intent to kill. I judge that he is a pyromaniac, because he has committed these acts, and is insane." Drs. Gray, Cook, and Bell, however, testified to the sanity of the prisoner. The former testified that he had never believed him to be insane, although the prisoner had been kept in the asylum, of which Dr. J. P. Gray is superintendent, for six years as a lunatic. Speirs was convicted. Other cases of reasoning mania associated

with criminal impulses, included that of the notorious Helen Jégado, were then related. In all these cases Dr. Hammond believed that, although the affective faculties were those chiefly deranged, that some, however slight, intellectual derangement was present; it had been discoverable in all cases which came to his notice. The objection some authors made to the recognition of reasoning mania, that intellectual derangement did exist, he thought a mere quibble, as the question whether the intellect was involved or not was resolvable into the interpretation of what constituted "intellectual derangement." In any event, the reasoning maniac is, as Dr. Spitzka declared while on the witness-stand in the Guiteau trial, and as Campagne said seventeen years ago, "a true moral monstrosity." Campagne gave some interesting information concerning the bodily peculiarities of reasoning lunatics, particularly in relation to the cranial contour. The reader illustrated the cranial peculiarities by means of a cast of Guiteau's head. Dr. Hammond then undertook to apply the results of the foregoing inquiries to the assassin of President Garfield. He asserted with great positiveness that it required no stronger proof to demonstrate the unquestionable insanity of the prisoner than the very "hypothetical question" asked by the counsel for the prosecution. The reader called attention to the fact that the "experts for the prosecution" had all agreed in positively asserting that the subject of that question was sane, although he would say that there is not an asylum under the charge of any one of the medical experts for the prosecution that does not contain patients less insane than Guiteau. An earlier publication of the reader's was then cited from by him, in which he had taken strong ground ten years ago that violent acts committed by lunatics under alleged inspiration or other incentive based solely on faith, should lead to the permanent sequestration of these subjects, but that individuals who, knowing that to point a pistol at a human being, cock it, and pull the trigger, are acts which will cause the death of the person against whom they are directed, should be subjected to the same punishment for a homicide as should be awarded to a sane person under like circumtances, and that the insane person, whose delusions are not such as would, if true, justify the homicide, would come under the same rule. He instanced the delight experienced by certain thieves in theft as analogous to the gratification derived by some lunatics from the commission of crime, and that both cases required the same treatment at the hands of the law. Dr. Hammond remarked that he had been abused by certain ultra-humani-

tarians and emotional philosophers for these views, by the same people, in fact, who now, desiring that Guiteau might be proven sane, still endeavored to persuade themselves that their wishes and facts are the same thing. Shame be it to American psychological medicine, they were sustained by certain physicians who appeared as witnesses for the prosecution. In concluding, the reader, after briefly adverting to the decisions of Chief Justice Davis and Judge Hogeboom, said: "Let Guiteau suffer the full legal penalty for his crime, but let him be executed with the distinct understanding that he is a *lunatic deserving of punishment.* To shut our eyes to his exact condition, and to try to flatter ourselves that he was of normally constituted mind when he shot the President, is not only cowardly, but it is impolitic. The conviction and execution will be without the force of an example upon hundreds of others of unsound minds who may be contemplating the commission of crimes. And it will lead to the erroneous conclusion that there was a sane man, a man in the full possession of his mental faculties, capable of killing the President of the United States for the purpose of uniting the two wings of the Republican party, when both had never failed to show their contempt for the assassin whenever he had given them the opportunity. Was there ever a more insane motive than this, and was there ever a man whose whole career from childhood to the present day has afforded a more striking example of that form of mental derangement called reasoning mania?"

Dr. Ralph Parsons was called upon by the President to open the discussion, and spoke in substance as follows: I believe this paper to be in accord with the opinions of our best men on insanity. In all cases of reasoning mania or emotional insanity, I have always held, as the result of my observation, that the intellectual faculties are involved. No faculty of the mind can be deranged without some diseased condition of the brain. The faculties of the mind are so inter-independent that we may not always perceive an individual aberration, but still it exists. In many cases of insanity, purely emotional disturbances are most noticeable at first, as, for example, the change in the feelings accompanying forms of incipient paralysis of the insane, and these and the physical signs become stronger as the disease goes on. There are few cases of insanity in any asylum where the patients are not governed more or less by motive, as truly as are the sane. Not that sane persons are influenced in precisely the same way, but the very government of an asylum depends upon the truth of this fact. A patient is tur-

bulent, and is told that he will be sent to an unpleasant place if he continues, and this has a favorable influence upon him. It is impossible always to tell whether the practising on such motives is beneficial or not, and a strict legal statement is impossible. A person who tries to govern insane persons through their motives carefully governs each case, and, failing to reach one motive, may succeed with another. Then the question comes, if these persons are thus influenced through their motives, if they understand rewards and punishments—although these are not called for—are they responsible? I think they are not. Most patients shut up in asylums are, however, responsible in a certain sense, and are so understood to be, and receive rewards and punishments, although under other names.

But as to the legal punishment of such cases I do not agree with Dr. Hammond. It is asked, Why should they not be held responsible if they know the distinction between right and wrong? The patients seem sane to superficial observers, but they are not influenced by motives as other men are, and if not so, they should be put into a class by themselves. It is said that these cases should be punished for the sake of example. But the sane are not influenced by such examples, and the few insane who might be cognizant of it would not be affected unless the punishment were brought directly and distinctly to their knowledge. The motive leading to the evil act is incomprehensible to the patient himself. He cannot compare himself with others. But society should be protected. An adequate remedy is proposed—that a special verdict should be given in criminal trials of persons of unsound mind, stating the fact of insanity, and that such a person shall then be permanently confined in a proper house of detention for the insane. But it is not in accordance with my views of justice or public policy to punish the insane like sane criminals.

Ex-Judge Hull being called upon, said that he was not prepared to discuss the paper, having anticipated that Dr. Johnson's paper would have come up for discussion.

Mr. George H. Yeaman, who was the next speaker, said: We lawyers sometimes think these talks not practical enough. They abound too much in terminology and fine-drawn, hair-splitting distinctions. For instance, I would like to ask Dr. Hammond whether anything is gained to science by the use of the term "reasoning mania?" When I was a student I encountered in my reading the term "partial lunacy," and I want to ask if that doesn't cover the case. A man may be partly bereft of reason,

I suppose, as this handkerchief is partly white and partly soiled by use. I concur with the views of Dr. Hammond that Guiteau is a man of not thoroughly sound mind, but amenable to the law, as he knew what he did was unlawful. But to the old rule of absolving a man not knowing right from wrong, I would add the point: Was the condition of the man's mind, will, or self-control such that the knowledge that he would be punished could not deter him? Ought not this to be an element in the question? The term "reasoning mania" confuses me unless we fall back on partial insanity. Experience shows that the mind is not as an entity, but it may be partly in darkness. I agree with the conclusion that the accused man is a fit subject for punishment, not as we would kill a mad dog, but on the ground that he knew what he was doing to be wrong.

Dr. Spitzka, who was next invited to speak, suggested that the Chair call upon those physicians who testified that Guiteau was sane, or upon the counsel for the prosecution, both having been notified, and both being represented by gentlemen residing in New York within walking distance of the meeting. It was found that neither the counsel for the prosecution nor their experts were represented by a single person in the audience.

Dr. Spitzka then said that, for reasons which were probably familiar to a few of those present, he took some interest in the Guiteau trial. He had in that case been approached by, and had declined to appear for both "sides," and finally been compelled to testify under an attachment. In consequence, he had learned a good many valuable lessons; the first was, that an expert could be compelled to testify by order of a court, to leave his practice, and to travel three hundred miles for a nominal and inadequate compensation. He had learned a great many other lessons, which, however, interested him chiefly from an individual point of view; but there was one lesson, which might concern also the society to have retailed, inasmuch as it involved the question of expert competency. It had been the general belief that an expert on insanity was a man who had made special and diligent studies of the anatomy, physiology, and pathology of the brain. That delusion had, however, been disposed of at Washington [laughter], and the speaker had learned of a patented recipe for making an expert much more easily and at much shorter notice. Take some plausible physician, supported by certain professional and social coteries, pack him on board the limited express of the Washington and Potomac Railroad, put a lawyer by his side coaching him on what he is to testify to, then deliver him safely

to the hands of one of the prosecuting counsel in the Guiteau case, closet him with both counsel for two days, put him through a recitation and rehearsal, and place him on the witness-stand. [Laughter.] The expert is now ready for use, and will as coolly swear away the existence of moral insanity as of anything else, though he may be unfortunate enough, in the course of a cross-examination, being asked to detail the extent of his reading, to refer to an authority like Bucknill and Tuke, the index in whose work, the best in the English language, contains the words "Moral Insanity," printed in extra large type, twenty-six page references to that subject, and a foot-note ridiculing the very position taken by such an "expert." Dr. Spitzka continued: I examined Guiteau carefully, and found him full of delusive conceptions. He wanted a German mission, knowing nothing of the country or language, a French mission, with equal ignorance, and he was sure of success. His egotism and assurance are wonderful. When he mounts the scaffold, it will, I think, be in the firm belief and expectation that God Almighty will descend from heaven and cut the rope. I agree with Mr. Yeaman that there is some confusion of terms in science, and I believe with Dr. Hammond that certain combinations of intellectual acts may be deranged, leaving the rest relatively sound. The most correct term for this form of insanity is the German one, meaning original insanity. Guiteau was born as much of a lunatic as he is now, and there are the profound defects in his mental make-up of the group of lunatics to which he belongs. His family history is tainted. I presume those here will agree with me that the word of Dr. McFarland, of Illinois, will outweigh the word of all the witnesses for the prosecution, when he tells of Guiteau's father staying with him once, being palpably insane, on an occasion when the Guiteau's were visiting one of their numerous insane relatives at Dr. McFarland's asylum. One cousin died at the Elgin Asylum, another is now living at the Pontiac Asylum, an uncle died in the Bloomingdale Institution, and a few days ago I received a letter from a prominent physician in the central part of this State, informing me that another uncle whom he had seen, had had attacks of maniacal frenzy.

The speaker then read extracts from the history of a patient, who presented many analogous features to Guiteau, and in whose brain evidences of malorganization were discovered after death. Here the hereditary transmission was as unquestionable as in the case of Guiteau. He could not agree unreservedly with Dr. Hammond on the question of responsibility While he did not

claim to have studied the juridical and sociological aspect of insanity sufficiently to be dogmatic, yet there were particularly two reasons for considering the doctrine of the punishability of Guiteau fallacious, whatever other reasons might outweigh them. In the first place, Dr. Spitzka emphatically denied that the conviction of Guiteau would have any effect on similarly constituted lunatics, as a deterrent. Any one who had intelligently followed up the history of the past eight months knew that such lunatics were not intimidated by the prospective fate of Guiteau; rather the contrary. Hardly had Guiteau shot the President, and a thrill of horror agitated the whole land, when McNamara attempted to assassinate Mr. Blaine. Two months later, while the nation stood at the wounded chieftain's bedside, a crazy farmer armed with a shot-gun ascended the steps of the Capitol at Albany to shoot Governor Cornell, and at the very moment when Guiteau was arraigned, when the public pulse beat highest in indignation against the assassin, a lunatic with a written commission from heaven in his pocket tried to enter the White House to take the Presidency, and "remove" the then incumbent with a loaded revolver found on his person. The matter of punishing Guiteau was no longer one of retribution on a disgusting and repulsive wretch by a great nation, as soon as it was recognized that his repulsiveness was the outgrowth of disease. Guiteau was not a whit less insane than the last-mentioned lunatic who tried to shoot Mr. Arthur, and who was facilely proven a lunatic and disposed of as one, because he failed in doing what Guiteau succeeded in, and for which succeeding he must be proven a sane man at all hazards. In addition, it seemed to the speaker that a question of national policy was also involved, and he asked whether the American republic could afford to do less than monarchical England did when it treated Hatfield, defended by Lord Erskine, as a lunatic and not as a responsible regicide.

Dr. George M. Beard, who was next called upon, spoke substantially as follows:

I have studied this case for some months, and have expressed my views fully in articles in *The North American Review* and elsewhere. I agree almost entirely with Dr. Spitzka, and very largely with Dr. Hammond. I don't like the term "reasoning mania." I prefer Esquirol's phraseology in a famous chapter of his—so good that it was not referred to in the trial—and should say affective monomania, or simply monomania. I believe in simple terms. You can represent mania by the hand, and monomania, melancholia, etc., by the fingers—this is the relation. All

ideas on this subject for the last ten years have been based on evolution; on the principle that the brain grows like a tree and thought with it like the fruit, and that there is no cutting out of the moral nature to set it by itself. But what ought to be done with this man? His execution would be the greatest disgrace that ever befell this country, speaking from a scientific point of view. Even during his trial, there were insane murderers who were not even tried, and others acquitted, with less evidence in their favor. Stickney, in Colorado, has just been acquitted on this ground, although there was no talk of insanity before, because he had friends and influence.

But, as a principle, the hanging of Guiteau would be a return to the barbarism of the Middle Ages. At the time of the trial, politicians got together in caucuses and swore he was sane. They knew if they acknowledged he was not sane, he would have to be acquitted. I was at one of these caucuses [laughter] and I know how things were managed there, but I left it as soon as possible. We can only hang a crazy man by saying he is sane; so they swore his sanity straight through. All the evidence of his insanity was beautifully marshalled in line, and then adduced to show that he was sane. The whole thing was analogous to the Salem witchcraft trials. There, also, an old dogma prevailed. Insane murderers usually do know right from wrong, and it is because a murder is a terrible act that many an insane man commits it. If we carry out the doctrine of condemning every man who knows right from wrong, there is no safety under the law. It will be like the hog-cleaning machine in Chicago. The hog can't stop after he once gets in until he emerges, scalded and cleaned, on the other side. So, if we start with the dogma of knowing right from wrong, which Judge Cox announces, there is no stopping; trial must lead to conviction, and trial under such a dogma is conviction of lunatics.

Dr. Mann, the next speaker, said: I agree thoroughly with Dr. Spitzka and Dr. Parsons; I supposed our knowledge of insanity came from a common source—Esquirol—and I could not see how physicians could follow him and yet declare Guiteau sane. His case is an exceptional one, in being an instance of religious mania, or theo-mania, as it might be called. I think Judge Cox recognized this, if the experts did not. It is rare however, for only one per cent of the cases show exaltation instead of depression. The natural history of insanity usually shows melancholy preceding mania.

Dr. Landon Gray, of Brooklyn, said in substance:

Nearly all here will agree with Dr. Hammond, except with regard to one important principle at stake. We don't want to do as the Judge did who sentenced a man, not for stealing sheep, but to keep others from stealing them. It is irrational to kill Guiteau if we can get rid of him as a harmful agent in any other way. Every such case should be sent to an asylum for life, the superintendent made powerless to release him, no pardoning power vested in the Governor, and thus society is rid of the noxious element and perfect justice performed. I think this method is more humane and just than that which Dr. Hammond proposes.

Dr. Henry, being invited, briefly spoke as follows:

The question is one of so much importance, and has such general interest to all that, in common with the lawyers and alienists, I have an interest in it also. I have made up my mind to-night from what I have heard said that if I could receive the services of one of those lawyers for a few days I would become an alienist myself, especially when I recollect that it took only eight hours for two of them to turn a gynæcologist into an expert on insanity. [Laughter.] I did think that Washington was a nice place to be in, but if what my friend Dr. Beard has said in regard to caucuses is true, I change my mind. Some time I shall take the opportunity to ask Dr. Beard about it privately. I read with a great deal of interest the description of the wound made by the bullet from the assassin's pistol, and I have followed with care and minuteness the course of the trial. I have had some experience in this line, for I was head of the hospitals on Ward's Island for some time, including the Emigrant Insane Asylum, and I confess that Dr. Hammond has not said a word here to-night in his paper that I am not willing to indorse.

Dr. L. A. Sayre had but a single word to offer, and only a single word, and that one of regret that the suggestion made by him the time of the murder has not been followed out, viz., that Guiteau should have had these investigations made of him before the trial. He agreed with Dr. Gray that thase maniacs should be put in asylums for life. It would be better that Guiteau should be shown a lunatic than that the idea prevail that any one other than a maniac would dare to shoot the head of the nation in this free and enlightened Republic.

Mr. Bell, the President, without yielding the Chair, remarked:

There are three points on which I may say a few words upon the very able paper we have listened to this evening, and first, regarding that form of insanity known as reasoning mania. The modern authors who are recognized in both professions as author-

ity, are mainly alike in defining that form which a generation since has called monomania, or one kind of it, "reasoning mania," and in subdividing and classifying its various phases, so that the term "monomania" is scarcely used at present, or if used, has no distinct signification. In all cases, however, properly classed as monomania by the older writers, and, of course, including that form under discussion, the patient was usually characterized by acuteness of intellect, and frequently by remarkable brightness of the reasoning faculties upon all subjects except the particular one upon which the mind was deranged.

"Reasoning mania, as a distinct form of insanity, is well defined, besides the authorities cited by the author of the paper, by other authorities, notably by Bucknill and Tuke, and it was remarkable that no reference had been made that evening to the numerous well-established forms of monomania. In many cases, it would be impossible to deny that the subject of reasoning mania did not understand fully, not only the natural consequences of the act, but that it was wrong *per se*. The doctrine of the legal responsibility of the insane has been in former years one on which the two professions have not usually agreed. The judiciary and lawyer generally have held that when the accused man knew clearly the nature, character, and consequences of his act, he was responsible before the law; but physicians generally and the French jurists have not heretofore acquiesced in the legal view taken by our profession.

"It may not be amiss here to quote again the answer made by fifteen judges to the House of Lords in consequence of this trial of McNaughten, and their answer, only Justice Maule dissenting, was, as to certain of the questions, as follows: 'That notwithstanding the party committed a wrong act while laboring under the idea that he was redressing a supposed grievance or injury, or under the impression of obtaining some public or private benefit, he was liable to punishment.' The jury ought, in all cases, to be told that every man should be considered of sane mind until the contrary was clearly proved in evidence. Differing, however, from many of his profession, the author of to-night's paper has taken the view generally taken by the bar and by the judiciary, and has contended that an insane criminal should be held to the same responsibility as the sane, if he was able to understand the nature of his act and its consequences, and to discriminate between right and wrong. Without seeking to disturb the verdict, which is generally acquiesced in, the mental state and true condition of the assassin form an important question

in forensic medicine to-day which was not settled by the verdict."

Mr. Delano C. Calvin followed up the remarks of Mr. Bell by asserting his belief that a medico-legal society was entirely misnamed, if its functions were to be limited to the citing of authorities, precedents, and decisions. He thought that its object was the improvement of defective laws. If he cared to hear laws read, he could go elsewhere, and those read that evening were perfectly familiar to him.

Mr. George Scoville here asked the privilege of the floor for a few moments, which was granted him. He said:

"I think that it will be found before this case is done with, that that law (alluding to the McNaughten case mentioned by the President) is not correct law, and that courts neither in this country nor in England adhere to the rules laid down in the McNaughten case. My investigation of this subject has led me to this conclusion: that the courts, with some degree of humanity, generally find modes of modifying the law, so that, while they hold to the spirit of the law, they do not hold to the strict letter of the law. In a case like the Guiteau trial, they depart from the rules just to the extent that public opinion demands it; if the public opinion demands it, then all and any rules are wholly departed from. It may be thought that I speak from personal motive. Not so. It is important for the welfare and the future of this country that our code of laws be made to cover the exigencies of to-day, and that we do not make an iron rule to govern sane or insane alike.

Mr. Scoville's remarks were well received. Dr. Hammond then closed the discussion. During its progress, the plaster-cast of Guiteau's head, which had been in evidence at the trial, had been passed about among the audience, and the obvious deformity it exhibited was the subject of general comment. Dr. Hammond opened with a consideration of the strictures of Mr. Yeaman. He stated that the term "reasoning mania" was a good one, and that it did not correspond to "partial insanity" or to "monomania," to which latter term an entirely different signification attached, at least in England and America. Besides, he had used the term as he had found it; it was a term sanctioned by high authority, and it would have been an unwarrantable assumption for himself to have changed it.

The cavils of lawyers against badly chosen medical terms in use among alienists, applied to a good many terms used by lawyers, and also to many of those employed in medicine outside of psychiatry. Take, for example, the term gonorrhœa; all the physicians, and probably a few of the lawyers [laughter] knew

what that meant, and yet it so happened that the term was altogether erroneous, etymologically meaning a flow of semen. In view of this incorrect construction of the word, numerous authors had endeavored to introduce correctly coined new ones, but such was the influence of tradition in nomenclature that the word gonorrhœa had survived all of them, and would probably, as he supposed "reasoning mania" would, survive to all time. With regard to Dr. Spitzka's statement, that the punishment of lunatics like Guiteau did not have a deterrent effect on other lunatics, it was supported by, it is true, numerous cases, but these had all occurred before Guiteau's conviction. Washington had been crowded with lunatics from all sections of the country, awaiting the result of the trial to regulate their own action thereby, and perhaps to commit acts similar to Guiteau's, and Dr. Hammond advised Dr. Spitzka to wait and see whether now these lunatics would commit similar acts; if they did, it would be time for him to advance arguments, at present premature, against the conclusions of the author. The speaker then stated that it was true that the execution of any lunatic conflicted with abstract justice. But it was not abstract justice we were after, or were able to attain in this world. There was scarcely a criminal trial whose results did not strike the innocent with the guilty, for the relatives of a sentenced convict suffered probably as much as he does, from the obloquy attaching to the sentence. While he admitted that some such enactment as that recommended by Dr. L. C. Gray called for his approval, and would meet the emergencies to be met, yet he had written and read his paper with reference to the existing laws, and under those laws, Guiteau, knowing the legal consequences of crime, should be punished, because he could have avoided committing the one for which he stood indicted.

After several conflicting propositions had been made with regard to the discussion of Dr. Johnson's paper, some preferring to take it up after Dr. Hammond closed his remarks, and others contending that the paper deserved a special meeting for its thorough discussion, it was moved, seconded, and carried that the Society, when it adjourned that evening, adjourn subject to the call of the President, and that the discussion of Dr. Johnson's paper be made the sole order of business for the adjourned meeting to be so called.

The Society, then, upon the recommendation of the President, but under the protest of Dr. Harwood, based on the unconstitutional nature of the recommendation relating to a finance committee, adopted the following resolutions: That any person contribut-

ing one hundred dollars in cash, volumes, or library furniture, accepted as such by the Library Committee, shall be thereby constituted a life member of the Society. That a like contribution of two hundred and fifty dollars shall constitute the donor a patron of the library. That a like contribution of five hundred dollars shall constitute the donor one of the founders of the library. The following resolution was offered and adopted unanimously, having similarly been recommended by the President: That a Finance Committee of five be named by the Chair as a standing committee, of which the President shall be chairman, who shall have charge of all the financial business of the Society, order and audit all bills and accounts; a majority of whom shall constitute a quorum, and that the Treasurer is hereby directed to pay no bills except they have been approved by a majority of the Finance Committee.

The Society then adjourned a little after eleven o'clock.

The following standing committees were announced under that action of the Society which approved the recommendations of the inaugural address of President Clark Bell.

Committee on the Library.—R. S. Guernsey, Esq., chairman; Wm. A. Hammond, M.D.; Hon. Elbridge T. Gerry, Fordyce Barker, M.D.; Hon. David Dudley Field, Frank P. Foster, M.D; Hon. George H. Yeaman. Committee on Proposed Changes in Law Regarding Coroners.—Hon. D. C. Calvin, chairman; Wooster Beach, M.D.; Austin Abbott, Esq.; J. G. Johnson, M.D.; A. B. Mott, M.D.; Prof. C. A. Doremus, Geo. M. Beard, M.D. Committee on Proposed Changes in the Constitution and By-laws. —Hon. B. A. Willis, chairman; William M. Fleming, M.D.; Gen. Geo. W. Palmer, Lewis A. Sayre, M.D.; Judge Myer S. Isaacs, E. C. Spitzka, M.D., and O. H. Palmer, Esq. Committee on Plans for Increasing the Usefulness of the Society and best Methods of Work.—William A. Hammond, M.D., chairman; J. Clarke Thomas, M.D.; J. W. Wright, M.D.; Stephen Smith, M.D.; Clinton Wagner, M.D.; Jacob F. Miller, Esq., and Chas. P. Crosby, Esq. Committee on Sanitary Supervision of the Public Schools.—R. J. O'Sullivan, M.D., chairman; Hon. Geo. H. Yeaman, Hon. A. G. Hull, Prof. R. Ogden Doremus, T. B. Wakeman, Esq., John A. Taylor, Esq., Ralph L. Parsons, M.D. The following additional names were announced to the subscription for volumes to the library: Jacob Shrady, Wm. Shrady, Appleton Morgan, Max F. Eller, Chas. R. Bull, Chas. A. Doremus, O. J. Hochstadter, Wm. J. Morton, E. J. Birmingham, M.D.

CHICAGO MEDICAL SOCIETY.

March 20th, 1882.

AT a regular meeting of the Chicago Medical Society, March 20th, 1882, Dr. James G. Kiernan read a paper on "Simulation of Insanity by the Insane." He held that this question stands at the head of those which have been brought up for examination by the Guiteau trial, especially from the stand-point of an alienist. "If there be no question," he said, "that there exists an abnormal mental condition in this criminal—a fact of which I believe, most firmly, there should be no question, and if he be regarded as a case of primary monomania—the primäre Verrücktheit of the Germans, the manie raisonnante of the French—simulation might have been expected." Assuming this to be the case, Guiteau's simulation is of rather a peculiar type. Insanity, as claimed by him, is different from the idea of insanity as held by alienists, and is simply a quasi-legal plea that, as he was inspired by the Deity to remove the President, his free will was destroyed; and, according to him, a man without a free will is, in the legal sense, insane. To use his own phrase, he is "Abraham mad, but not crank mad." Strictly speaking, he did not feign insanity.

This plea was fatal to a belief in his insanity, already existent in the minds of the more intelligent laity, and had a very similar effect on a large number of the profession. The doctor considered this plea of insanity a very natural one on the part of an insane lawyer, and, as the subject became, therefore, of special interest, he had undertaken to examine the cases of simulation of insanity reported in medical literature, supplementing them by cases coming under his own observation. These cases, while not frequent, were not excessively rare. The Section on Mental Diseases of the International Medical Congress of 1876, Dr. John P. Gray, of Utica, presiding, unanimously adopted the following conclusion: "It is not only not impossible for the insane to simulate insanity for any purpose in any but its gravest forms of profound general mental involvement, but they actually do simulate acts and forms of insanity for which there exists no pathological warrant that we can discover in the real disease afflicting them."

Dr. Nichols, of the Bloomingdale Asylum, New York, at the conference of experts on the Guiteau case, cited the case of a man who committed murder, as he believed, under the command of the Virgin Mary, who appeared to him in the flame of a candle.

Two young lawyers were assigned as his counsel; they advised him to feign insanity, which he did under the form of dementia. The experts, Drs. Nichols and Ranney, detected both the sham and the real insanity, and had him sent to an asylum where his insanity became unmistakable.

Dr. Ray, in his discussion of the case of Trimbur, says: "The criminal classes, to whom most of these simulators belong, know as well as any one else that the plea of insanity is one of the dodges by which people now escape the punishment of their crimes, and they may not forget to act accordingly when they are insane. Trimbur, being unconscious of his real insanity, but with mind enough to understand his situation, and to remember what he had heard about insanity in connection with crime, concluded to making a show of being crazy."

Dr. Workman reports the case of an insane man who had escaped from his asylum, and killed his wife during an insane fit of jealousy. The man professed to the doctor to be completely without memory. While under trial for murder, he denied having ever been under the doctor's charge, or that he knew anything about the asylum. The doctor stated to the jury that the man was both simulating insanity and was insane. The prisoner was acquitted and sent to the criminal lunatic asylum at Kingston, Can. The doctor saw him there two years subsequently. He then fully recognized the doctor, and, in answer to a question, said that "he did not want to know the doctor" when previously examined by him. Had he been sane he would, as Dr. Workman suggests, have known that sufficient proof of his past insanity could have been produced, and he would have abstained from his clumsy simulation, or he would have acted more cleverly.

Dr. John P. Gray cites the case of a man who, two or three days before being admitted to an asylum, was met in the woods going towards his father's, carrying a gun, and he said he was "going to shoot the old man." When admitted, he said he had been out of his head for quite a while—"should think twenty-four hours."

Dr. E. C. Spitzka reports a case in which a criminal lunatic, having all the signs of degeneracy mentioned by Morel, feigned a type of insanity with religious delusion.

Dr. Kiernan cited Dr. Hughes as saying that "the insane appear at times, when they have an object to accomplish, more crazy than, and different from what, they really are. This is the sense in which we use the term simulation, and this condition is akin to that of feigning by the sane. Simulation, while it presupposes a

degree of sanity, does not require that the patient should be wholly sound in mind, and it might be attempted by a convalescent patient, not thoroughly recovered, desirous of remaining longer in the hospital, or for some other cause." A case coming under his (Hughes') observation was as follows: R. S., aged twenty-five, married, had a history of domestic difficulties, and was addicted to masturbation. After three weeks of insanity he was admitted to the Missouri State Lunatic Asylum. This was in April, 1867. In the following November he was discharged as cured. He had been a member of a variety show before becoming insane. Soon after becoming insane he was seized with a sudden desire to preach, and securing an audience in a country town, conducted the services with such an outrageous disregard of decency and propriety that he was driven from the pulpit. At the asylum, to which he was sent soon after, he went through various insane performances, dependent in character and frequency upon the interest taken in them. Laehr (*Archiv für Psychiatrie*, Band I.) narrates a case in which there was marked hereditary taint, who committed a crime against morals, shammed a form of insanity which he had not, and his real insanity came out after the sham was exposed. Similar cases are reported by Delasiauve, Ingels, Stark, and Pelman.

The cases coming under Dr. Kiernan's own observation were as follows: L. L., aged forty-eight, has had a brother and two uncles insane. He was for a long time a pauper, and is now somewhat demented. He has, at times, hallucinations as to his hearing. He complains continually about having tar and grease in his head, and says he is insane in consequence. He says but little on these subjects except to the doctors, and, for a long time, refused to work because he was insane, and had tar and grease in his head. He has found that his statement as to his insanity, and having tar and grease in his head, draws the attention of visitors and induces them to give him tobacco, and he takes advantage of the opportunities thus afforded, but he persistently denies that he has hallucinations. The patient's skull is unsymmetrical, and he is one of the cases hovering between primare Verrücktheit of the Germans and imbecility. The contrast between his concealment of his real insanity and the obtrusive manner in which he manifests his assumed delusion is very marked.

The second case was one of hebephrenia, the pubescent insanity of Skae, the primary dementia of some asylum reports. The patient displayed all the self-assurance found in that psychosis, but he found that a case of monomania attracted much more

attention than he did, simply because that patient claimed to have written several of Shakespeare's tragedies; whereupon he claimed to have written "all of Byron, all of Shelley, and all of Milton." A simple cross-examination showed that this claim was a mere pretense, and the patient not infrequently so admitted to the physicians, but he kept up making the claim to his visitors, although he refrained from doing so to the physicians themselves.

A case of chronic secondary mania, who plunged into the river every morning for a bath, breaking the ice if necessary, found that by feigning dementia he was able to secure tobacco and other little comforts, and kept this up, relapsing into his usual condition when his end was attained.

Dr. Kiernan concluded that the insane can and do feign insanity; that in most of those so doing, there is a strong hereditary taint; that their insanity belongs to the grade known as the primäre Verrücktheit of the Germans, the manie raisonnante of the French, the imbecility of the first grade of Ray and Nichols, the monomania of Spitzka, and the chronic intellectual mania, or chronic mania without incoherence, of asylum reports; that the insane may feign insanity when accused of crime, and a new complication thereby enter into the question of diagnosis, and called attention to the fact that it might be of interest to note that the theory suggested by Dr. Ray, that Hamlet was an insane man feigning insanity, would better explain the psychological problem presented in the tragedy bearing that name than any other theory yet suggested.

The discussion was opened by Dr. Ingals, who asked Dr. Kiernan if he thought that the extermination of the insane would have beneficial results as regards the race.

Dr. Kiernan replied that Maudsley claims that such extermination might be likely to deprive the race of some great genius. Schopenhauer, the pessimistic philosopher, sprang from a family containing numerous imbeciles. From such facts and opinions, the speaker thought Dr. Ingals could draw his own conclusions. There was no denying that, as individuals, the race would profit immensely by such extermination whatever might be the result as regards the race as a whole.

Dr. Gilmore remarked that there was a widely prevalent opinion that poets are closely allied to the insane, he would like to ask Dr. Kiernan if such was his opinion.

Dr. Kiernan.—Many poets are atavistic; that is, they belong to a period of the past, and are so out of accord with their surroundings, and, according to my own definition, I should be compelled

to pronounce such insane. Savage is one of this type; Shelley displayed marked mental abnormalties of another type. Still the greatest of our poets, Shakspeare, was eminently well balanced, whether considered from the stand-point of ours or his own age.

Dr. Clevenger asked Dr. Kiernan whether the Dr. John P. Gray, alluded to in his paper, did not deny that the insane could feign insanity.

Dr. Kiernan answered that he did, but in doing so had evidently forgotten the resolution of the International Medical Congress, quoted in the paper, and his own case.

Dr. Paoli referred to the fact that Guiteau has been said to have a flattened occiput; he inquired of Dr. Kiernan if that was not an atavistic peculiarity.

Dr. Kiernan was inclined to believe that it was in one sense, as the occipital lobes of the brain and the entire posterior fossa have a peculiar development in primates.

Dr. Vallin could scarcely believe that the positive diagnosis in the case of Guiteau was justified, for Hartshorne, in his Conspectus, says that medicine is not an exact science.

Dr. Kiernan rejoined by saying that if a man wishes to study insanity, he had better put Hartshorne and other such impedimenta carefully into the fire.

Dr. W. T. Montgomery hereupon informally asked the reader his definition of insanity. The reader closed the discussion by answering that the definition he used in lecturing to his class at the Chicago Medical College was as follows: "Insanity is the mental manifestation of a cerebral disease or malformation which perverts the mental relations of an individual to his surroundings, or to what from his birth and education might be expected to be his relations to such surroundings."

The Society then adjourned.

QUARTERLY REPORT ON PROGRESS IN NEUROLOGY.

ANATOMICAL CONTRIBUTIONS.

1. Henry C. **Chapman.** Observations on the Hippopotamus. Proceedings of the Academy of Natural Sciences of Philadelphia, 1881, pp. 126–124, with Plates.—2. Eugenio **Giovanardi.** Intorno ad un caso di anoftalmia doppia congenita (Mancanza dei nervi optici, atrofia dei lobi occipitali). Rivista sperimentale di freniatria, VIII., 3.—3. C. **Kupffer** und F. **Bessel.** Der Schädel Immanuel Kant's. Archiv f. Anthropologie, Bd. XIII. —4. J. J. **Mason.** Microscopic Studies on the Central Nervous System of Reptiles and Batrachians IV., J. of Nerv. and Ment. Dis., January, 1882. (Continuation of nerve-cell-nuclei measurements.)—5. Otis D. **Mason.** An Account of Recent Progress in Anthropology (for the years 1879 and 1880) from the Smithsonian Report for 1880.—6. C. F. W. **Roller.** Die cerebralen und cerebellaren Verbindungen des 3–12 Hirnnervenpaares. Die spinalen Wurzeln der cerebralen Sinnesnerven. Allg. Ztschr. f. Psychiatrie, XXXVIII., 3.

1. This industrious anatomist has dissected the brain of a hippopotamus; in the main, his observations agree with those of Peters. The lateral and coronal fissures, by uniting, as in the camel, giraffe, deer, and ox, form a deep imperfect transverse fissure. A distinct Sylvian fissure is spoken of, although it is questionable whether the term fissure is applicable to a slit existing between lobes in apposition, and it is added that a rudimentary island of Reil was noticed in this fissure. A more thorough dissection would have shown that in its area the insula of the hippopotamus is considerable, and that its festooned gyri are well marked. The cerebellum is stated to deviate from the ordinary ungulate type, by having its greater diameter transverse instead of sagittal, and in this respect, as in other features of the basilar configuration, the brain of the hippopotamus approaches

that of the manatee. This is an exceedingly interesting fact from a zoological point of view; it is to be regretted that the plate (XVI.) of the brain should be in every respect such an imperfect representation. The apex of the pineal gland is represented as removed, giving the impression that what is left in the figure is merely a pedicle, whereas, in reality, the epiphysis of the hippopotamus has no pedicle, but is fixed by a broad base, and becomes gradually attenuated to a mere point.

2. In a child aged fourteen months, which was born without ocular globes or any trace of them, and which died of an incidental disease, the following interesting conditions of the encephalon and cranium were found: Almost complete absence of the superior occipital fossa, total absence of the optic nerves, chiasm, and tracts, of the external geniculate body, and the posterior bigeminate pair (while the anterior was well-developed ?—Reviewer). The occipital lobe was atrophic, and a complete external occipital sulcus separated it from the rest of the convexity, almost as in apes. The nerve-cells of the occipital cortex were of smaller dimensions than normally. It is to be regretted that the author does not specify anything as to the cell-group atrophied, and whether the solitary cells of Meynert were involved or not. The ciliary ganglion, its roots, and its efferent nerves were absent.

3. Remarkably enough, the skull of the great German philosopher, Kant, exhibited the frontal suture, which has ordinarily been held to be in itself a sign of low development. How it could be so considered is, of course, strange, in view of its early obliteration, not only in the anthropoid, but also in the lower apes—a fact diminishing the value of the presence or absence of this suture as a criterion of race or individual development. Although Kant was but little over five feet in height and of delicate physique, the capacity of his skull was 1740 cubic centimetres, an unusual dimension when it is borne in mind that only two and a half per cent of the race having the largest crania, namely, the German, exceed 1700 cubic centimetres. The sagittal measurement being taken as 100, the transverse was 88.5, the vertical 71.1, so that the cranium was hyperbrachycephalic, orthocephalic, and platycephalic. The forehead was not remarkable for breadth or height, the frontal bases were only 60 millimetres apart, but the bitemporal diameter was already considerable, namely, 133.5 millimetres. The most remarkable feature was the disproportionately great development of the upper fossa of the occiput, the one destined to receive part of the occipital lobe of the cerebrum. While in the average skull the cerebral occipital fossa bears to the

cerebellar fossa the proportion of 1 : 1 or 3 : 2, in Kant's skull the proportion is 2 : 1. On the whole, taking into account the diminutive physique of the great metaphysician, his cranium indicates a voluminous brain, and one preponderating in its higher centres. We may add, on the part of the reviewer, that it illustrates the fallacy of the commonly accepted theory that the frontal lobe is the seat of the highest intellectual co-ordinations. The relative diminution of the frontal lobe was in harmony with the reduction of the cerebellum and the diminutive physique, all mutually related factors.

PHYSIOLOGICAL CONTRIBUTIONS.

1. W. **Biedermann.** Beiträge zur allgemeinen Nerven- und Muskel-Physiologie. (7. Mittheilung.) Ueber die durch chemische Veränderung der Nervensubstanz bewirkten Veränderungen der polaren Erregung durch den elektrischen Strom. (Aus: "Sitzungsberichte der k. Akademie der Wissenschaften.") Wien, 1881, Gerold's Sohn, 8vo, 52 pp.—2. A. **Eulenberg.** Ueber die Latenzdauer und den pseudoreflectorischen Character der Sehnenphänomene. Neurologisches Centralblatt, 1882, No. 1.—3. F. **Goltz.** Ueber die Verrichtungen des Grosshirns. Gesammelte Abhandlungen. Mit 3 Taf. in Farbendr. (Aus: "Pflüger's Archiv für die gesammte Physiologie.") Bonn, 1881. Strauss.—4. **Habershon.** Cold Shock in its Action on the Pneumogastric Nerve. Lancet, December 31st, 1881.—5. Alexander **James.** The Reflex Inhibitory Centre Theory. Brain, October, 1881.—6. Jacob **Moleschott.** Ueber die allgemeinen Lebenseigenschaften der Nerven, Rede bei der Eröffnung des neuen anatomisch-physiologischen Instituts an der Universität zu Rom. Giessen, 1882.—7. W. **Preyer.** Die Seele des Kindes. Beobachtungen über die geistige Entwickelung des Menschen in den ersten Lebensjahren. Leipzig, 1882. Grieben.—8. A. **Tamburini** e G. **Seppilli.** Contribuzioni allo studio sperimentale dell' ipnotismo (Ricerche sui fenomeni di senso, di moto, del respiro e del circolonell' ipnotismo e sul loro modificazioni per gli agenti estesiogeni e termici. Rivista sperimentale di freniatria VII., 3.

2. The author studied the little symptom which has had such great import attached to it, by means of the graphic method, and found that the period of latency of the patellar reflex does not exceed $\frac{3}{100}$ of a second (=0.03226) in healthy persons. There

were found, however, two remarkable exceptions among the healthy group, a man who had no patellar reflex whatever, and another in whom it was absent on one side and present on the other with a period of latency of $\frac{3}{62}$ of a second. In certain cases of pathological exaltation of the reflex this period was found to be even less than $\frac{1}{62}$ (0.01613) of a second. Inasmuch as, according to Helmholz and Baxt, the rapidity of conduction in nerve-fibres is equivalent to 33.9 metres in the second, or about $\frac{3}{100}$ of a second to the metre, and as the distance to be run through, centrifugally and centripetally, by a patellar reflex, if it were a spinal reflex, is just about one metre, it is at least doubtful that the tendon-reflex is a spinal reflex. Even granting that the delay in the central ganglionic apparatus does not exceed $\frac{1}{100}$ of a second, as short a period as can be conceived here, the maximal latent period of 0.03226 could be accommodated, it is true, but not so the latent period of less than $\frac{1}{62}$ of a second. We have no right to assume such an acceleration of nerve conduction, as would be necessary to accomplish this functional feat, even under pathological circumstances!

On the other hand, it is found that wherever the latent period is of longer duration, the patellar phenomenon is of lesser intensity; thus it would seem that if the slowing of nerve transmissions passes a certain point, the phenomenon disappears altogether. This is illustrated by such cases as the one cited, where the reflex, while slower than typically on one side, is absent on the other. All these facts, taken conjointly, seem to Eulenberg confirmatory of Westphal's view, that the "tendon phenomena" are not purely reflexes, but are complicated movements in intimate connex with the muscular tone. Not only is a certain degree of this tone an essential condition of the phenomenon, but a certain rapidity and integrity of peripheral reception and transmission of the excitation are necessary to its normal fulness. The author fails to explain, and makes no attempt to explain, the discrepancies between his graphically registered periods and those which he admits to be the admissible physiological periods of transmission, and he says nowhere distinctly, although evidently believing it, that the reflex must travel through the cord. The acceptation of two combined factors as elements of the tendon reflex, explains to the author's mind how this phenomenon may disappear earlier or later in locomotor ataxia, and may be absent, while other reflexes, such as the tickling reaction and cremaster reflex, are intact. He believes that the increase of the tendon reflex under the use of strychnia, and especially the unilateral increase following an in-

jection on one side, in his own observation, is due to the heightened irritability of the sensory end-organs.

5. This paper is intended to supplement our knowledge of the causes of the increased reflex of the spinal cord after severance of it from the brain. The experiments of the author were thus devised: A frog's tendo Achillis was divided, and the gastrocnemius made to hang vertically. A weighted lever was attached to this tendo Achillis, and to the lever was fixed a pointer running over a smoked surface, and marking the height to which the lever rose at each contraction of the gastrocnemius. The weights were one or two drachms. Stimulation was done by single induction shocks. A certain number of shocks were given at intervals of thirty seconds, and sufficiently strong to produce slight or moderate gastrocnemial contractions; then the frog was decapitated, or the medulla divided, and, after two to five minutes' interval, a similar number of shocks were given at similar intervals. The difference in the height to which the lever rose, marked the increase or diminution of the reflex movement.

In the first set of twelve experiments thus performed, a rise took place after decapitation, but in two this did not occur. In seven of the cases, the increase was marked within five minutes, in three within six hours after decapitation.

Dr. James is a believer in the concentration theory, so to speak, of this cerebral inhibition. In other words, he adopts the view suggested by many others that the spinal cord, when cut off from the brain, manifests an increased reflex action, because the energy hitherto spent in travelling to the brain and returning is now concentrated within the cord. Another set of experiments which he performed are regarded by him as confirmatory of this view. "It would be expected," he says, "that when the wires from a battery are connected with the forelegs of the frog, there will be a greater tendency for the effects of the stimulus to pass to the higher centres than when they are connected, one with a foreleg, and the other with the hind leg of the opposite side. On this theory, we should expect that, when the reflex contraction is produced by an electric stimulus sent through the forelegs, its intensity should not be so great as that of the contraction produced by sending the current from a fore to a hind leg, or through the hind legs." Accordingly, after decapitation, stimuli sent through the forelegs produced a greater reflex than when sent through one fore and one hind leg, or when sent through both hind legs alone.

The experiments of Dr. James are certainly interesting, but they by no means furnish as good seeming proof of the "concentration theory" as the one of Vulpian's, in which the spinal cord being successively cut at lower and lower levels, it was found to exhibit a greater and greater reflex the lower the section. Still, all the explanations of these phenomena are but theories, ingenious and plausible many of them, still theories. Dr. James several times alludes to the increased reflex in lateral sclerosis as confirmatory of the concentration theory, whilst, to our minds, it seems one of the greatest stumbling-blocks in its way. Let us analyze the matter and see. A certain amount of energy enters the cord, having been set in motion by a peripheral stimulus. As no sensory tract is injured by a lateral sclerosis, there is nothing to prevent this energy from travelling to the brain. But the motor highway from the brain to the periphery along the lateral pyramidal tract is obstructed; the energy ought, therefore, according to the concentration theory, to flow over into other channels, and manifest its misdirection by increased function of the cerebrum within which it is pent up, and also in the sensory tracts, back into which it should be dammed by the surcharged cerebrum; but instead of doing all this, the muscles to which the pyramidal tract leads are the parts displaying increased reflex action. Again, if we are to take the "concentration theory" to our bosoms, we must have it explained why it is that myelitis of the anterior cornua and neuritis, both which affections obstruct certain normal outlets of energy, do not give rise to increased reflex in the unaffected portions of the cord. The old inhibition theory, too, according to which the cerebrum is inhibitory of the nervous axis below it, has many facts arrayed against, notably such as are contained in Vulpian's aforesaid experiment and those of Dr. James. The idea that these reflex phenomena result from irritation, is probably the most tenable of all. The lesions in a lateral sclerosis, in hæmorrhage or softening of the basal ganglia, or the motor cortical centres, are irritative, and the irritation manifests itself in the only place in which such irritation can manifest itself, viz.: in the muscles, just as an irritation of the posterior root-zones becomes apparent through the sensory tract running to the cortex. The more sections made in a cord, the greater the irritation; when a cord is severed by disease, or the knife, from the cerebrum, the greater the irritation, because every part of it is injured.

PATHO-ANATOMICAL CONTRIBUTORS.

1. J. **Baillarger.** Note sur une Altération du cerveau caractérisée par la séparation de la Substance Grise et de la Substance blanche des circonvolutions. Ann. Méd. Psychologiques, Janv., 1882.—2. Paul **Baumgarten.** Ueber gummöse Syphilis des Gehirns u. Rückenmarks, namentlich der Gehirngefässe, und ueber das Verhältniss dieser Erkrankungen zu den entsprechenden tuberculösen Affectionen (On Gummatous Syphilis of the Brain and Spinal Cord, particularly of the Cerebral Vessels and on the Relation of these Diseases to the Corresponding Tuberculous Affections). Virch. Archiv, 86 Bd., II. Heft, Nov. 3d, 1881.—3. G. **Coulbaut.** Des lésions de la corne d'Ammon dans l'épilepsie. Paris, 1881, 4to, 68 pp.—4. Christian **Fenger.** Supposed Poisoning by Bromide of Potassium. Chicago Medical Review, Jan. 15th, 1882.—5. N. **Kolessnikow.** Ueber pathologische Veränderungen des Gehirns und Rückenmarks der Hunde bei Lyssa (On Pathological Alterations of the Brain and Spinal Cord of the Dog in Hydrophobia). Virch. Archiv, 85 Bd., 3tes Heft.—6. G. **Marchant.** Des épanchements sanguins intra-craniens consécutifs au traumatisme. Paris, 1881.—7. **Popoff.** St. Petersburger Med. Wochenschrift, No. 33, 1881 (quoted from Chicago Medical Review).—8. Geo. H. **Savage.** Punctiform Cerebral Hemorrhage. Journal of Mental Science, Jan., 1882. (With one plate.)—9. A. **Weichselbaum.** (A Ganglionic Neuroma of the Supra-Renal Capsule.) Virch. Archiv, 85 Bd., 3tes Heft.

1. Baillarger describes very accurately a lesion heretofore but imperfectly noted by Calmeil and others. It is found in the brains of paretic dements. As is well known, adhesions at the apices of the gyri frequently lead to a decortication when the membranes are removed in such brains. This decortication, however, is irregular and only involves a few layers of the cortex, leaving an irregular *quasi* ulcer-like surface behind. The lesion here described is different, owing on the one hand to an induration of the white substance; on the other, to the meningo-cortical adhesion and, perhaps, the softening of the cortex; the entire cortex of a considerable area follows the membranes, leaving the cleanly separated white substance behind as a sort of negative cast of the gyri. The explanation for this separation offered by Baillarger is, that the gray substance being softer, the white firmer than natural, and both shrinking from atrophy, they separate.

The anatomical comments made by the author are not supported by modern studies on the brain-cortex.

2. In previous articles the author had maintained that, besides Heubner's syphilitic disease of the cerebral vessels, which was of the nature of a simple "arteritis deformans," there was an anatomically specific gummatous form of syphilitic cerebral arteritis. In this paper he discusses the influence of syphilis upon atheroma. Virchow had, in his work on tumors, spoken very cautiously concerning this inter-relationship. Curri, in 1877, had regarded the influence of syphilis in this matter as very doubtful. Huber, in a reply to a previous article of the author, mentions two cases in point; but the proof is in both inadequate.

Prof. Baumgarten gives details of a case of syphilis in a prostitute, of some five years' duration, in which post mortem numerous gummata were found upon the dura, the arachnoid, and the cranial vessels and nerves. The tumors upon the dura—both sides of the falx cerebri, inner surface of basal dura over petrous portion of temporal, upper surface of tentorium cerebelli—were composed of formations varying in size from one to five mm. Each of these formations was made up of three different zones: the outermost of a granulation-like tissue, rich in cells; the middle one of a fibrous substance containing a scanty number of round cells; the innermost, the largest, of a spindle-celled tissue, with moderately developed connective-tissue basis-substance, whose cells were united into masses of varying width, the section cutting them likewise or crosswise, so that the structure is quite analogous to that of a fascicular sarcoma. The giant-cells of Langhans are also found in this inner zone, though scanty in number; but the zone is peculiarly distinguished from the others by the presence in it of cells and basis-substance of a commencing or more or less advanced necrosis. Colored by E. Neumann's method in picro-carmine, most of the tissue nuclei are yellow and lustreless, instead of red and glancing, the basis-substance yellow and clouded, instead of colorless and transparent; in places all trace of structure is lost, cells and basis-substance being transformed into an opaque, dust-like mass, usually tinged intensely yellow. With a high power these three zones can be seen to pass into each other. Both the outer zones were found histologically the same in all the dural tumors, but the innermost zone not infrequently presented, in the stead of the sarcoma-like structure, a simple one, resembling that in granulations and cicatrices; moreover, the foregoing partial and incomplete necrobiosis gives way at times to a complete process of the same kind. Between

the formations composing these dural tumors lay a vascular, large-celled tissue which inclosed scanty, concentrically layered cell-masses, centrally calcified (Sandkörper of Virchow, also described by E. Wagner in a dural syphiloma, and Virchow speaks of sandy formations as of almost physiological occurrence in the cerebral dura). The nodosities of the spinal dura were of a similar kind. The neoplasms of the arachnoid and pia were analogous, but in them the granulation-like structure was predominant over the sarcoma-like and fibroid elements of the two inner zones, and the giant cells of Langhans were more numerous; in addition, the vessels were involved in an arteritis obliterans or in the specific nodous affection presently to be described. The tumors of the spinal pia and arachnoid were the same in kind, but they penetrated with the septa into the substance of the cord and medulla, and the former was found to have undergone some fibrous degeneration around them. Nothing resembling miliary tubercle was found anywhere.

Passing on to sections of the arterial nodules, the author found first the evidences of an endarteritis obliterans. But in the adventitia and media, as well as in the tissue between them (answering to the lymph-space of the smallest arterioles of Virchow and Robinson), the new formation had undergone caseous change or was undergoing it. In the larger and largest arteries, also, there was caseous mortification of the cells and basis-substance in the peripheral layers of the intima, and in such places there is often a solution of continuity, so that the caseous product without the lumen is directly continuous with that within; still, the new formation here preserves the character of an indifferent, vesselless, fibroid tissue. In the intra-vascular formations, fatty transformation and calcification are entirely wanting. It is noteworthy that often where the new formations of the media border upon the elastic limiting membrane, there is a row of giant-cells, with their long axes parallel to the transverse axis of the vessel, and a giant-cell marks the point of rupture of the membrane.

In the arteries diseased in a diffused manner, there was found granular peri-arteritis and mesa-arteritis, with an endarteritis often entirely obstructing the lumen, but without fatty or calcareous metamorphoses. The endarteritis was more extended laterally than the others. These diffused portions passed gradually into the nodules. In the arteries diseased in a disseminate way, there was a cellular proliferation of the adventitia, running out between the adventitia and the media, as well as into the fibrillæ of the adventitia, and in places where a somewhat nodular form

was assumed, there was commencing caseous degeneration; moreover, scattered collections of round cells in the media, and a zone of proliferated endothelium directly proportional to the infiltration of the adventitia, although the peri-arteritis was more extended than the endarteritis towards the periphery in the vascular space between the adventitia and the media. There were also foci of disease in which were present endarteritis and mesa-arteritis, and yet no proliferation of endothelium whatever. Not infrequently, especially near the peri-arteritic foci, occasionally in other places, the small and smallest arteries of the pia presented an appearance somewhat simulating diffuse tuberculous disease; thus, a covering of small-celled infiltration covered the muscular fibrillæ of the vessel, but it nowhere attained to such thickness and density as in tuberculosis, and the lumen of such vessels was often narrowed or closed by newly-formed spindle-celled tissue, or a connective tissue poor in cells.

In regard to the affected cranial nerves, the oculo-motorius, in places where the naked eye could detect no alteration, was in a condition of small-celled proliferation of the neurilemma, its outshooting septa, and even of the peri-neurium. These proliferations increased as they neared the tumor swellings upon the nerve trunks, not only by cellular infiltration of the neurilemma, but also by a transformation from without inwards into a granulation-like tissue. Intact nerve-fibres were found between the new formations, scantier as the new formation increased, in some places entirely disappearing. In the region of the nodules, the whole nerve-sheath has had its place taken by the new formation; here also intact nerve-fibres were seen at intervals.

The patient had had many unquestionable symptoms of syphilis, but she had also suffered from tuberculosis, and even post mortem a typical though limited tubercular deposit was found in the lungs. What evidence was there that these new formations were syphilitic, and not tuberculous? The author bases his proof upon the anatomical and histological data alone, inasmuch as the clinical history was not decisive.

He thinks the cheesy nodules too dense and multiple to have been tuberculous. In tuberculosis, the cheesy nodules are invariably, according to his experience, miliary in size, whilst in this case they were of size of hempseed or the half of a bean. There was an entire lack of the usual miliary and submiliary substratum so characteristic of tuberculosis, in the connective tissue of the pia and the adventitial sheaths of the small arterioles of the pia. The new formations in the pia and arachnoid were those of

typical gummata. What especially distinguished this case from similar ones was the almost invariable and thoroughly caseous character of the specific products, the copiousness of the eruptions, the non-extension of the tumors into the cerebral substance, and their non-fusion with the dura, the coincident disease of the spinal meninges in a specific, gumma-like form. In tuberculosis, the tubercles of the pia are usually very fine, of the size of sand or poppy-seed, often microscopic, seldom miliary; in this case the smallest were about the size of hempseed, the largest as large as beans and larger. In tuberculosis, the tubercles usually affect the adventitia of very small and the smallest arterioles. In this case the deposits were found largely upon the large and largest arteries, and the smallest formations were found on arteries by no means of terminal calibre. In tuberculosis of the pia, according to such authors as Cornil and Ranvier, Brodowski, and Kiener, upon the adventitia is found a wall of small cells, the media (consisting only of two, at most of three, muscular layers) free from pathological cell-formation, the lumen obstructed by a finely granular mass, fringed with cells and nuclei. Prof. Baumgarten thinks that the lumen is more free. He also affirms the existence of giant cells of Langhans in the lumen. In this case the arterioles of the pia were not obstructed in any such manner, and when the infiltration of the outer coats of the vessel had reached a certain degree, the lumen was obstructed or narrowed through tissue that was either spindle-celled or non-nucleated. In tuberculosis of the larger and middle-sized arteries, the author agrees with Brodowski, Cornil, and Kiener, that endothelial proliferations *may* occur, but he affirms that in most cases the endothelium is either intact or there is only a slight proliferation ; but nothing is ever seen having the characteristics of newly-formed cicatricial tissue, as in this case. The peri- and mesa-arteritis, too, in the author's case, presented caseous degeneration to a degree seldom or never seen in similar tuberculous affections. The vessels affected were also larger than is the case in tuberculosis. The dural formations contained too much caseous material for tuberculosis. The deposits involving the nerves were not of the structure of tuberculosis.

The paper then proceeds to a discussion of gummatous syphilis of the brain and cord.

4. The patient was a woman of about fifty years of age. No reliable history of previous life and health could be obtained. Her statements were inconsistent and unreliable. A fair history of epilepsia gravior could, however, be made out, whose seizures

occurred once a month. The patient was also known to be insane. She was discharged by the House Physician to the County Poor House, but through neglect of the nurse remained, and on December 1st was ordered, by the attending physician, fifteen grains of potassium bromide every two hours. On the morning of December 3d, she was found in a stupor, from which she could be partially aroused by irritation, but immediately relapsed into a condition of stupor when the irritation was discontinued. When the integument of the limbs was pinched, she drew them up, but did not speak. She sat up in bed, and was gotten into a chair for a short time. Drank part of a glass of milk. Slight jactitation of hands; pupils equal and normal in size, only slightly responsive to light. Pulse 64; irregular and feeble. Temperature 98.1°. Respiration 20. On making inquiries as to the cause of this condition of affairs, it was ascertained that about fifteen hours prior to this time patient had drunk the contents of the bottle containing the bromide of potassium solution prescribed for her, and which had been left on the table beside her bed. Nine drachms remained in the bottle, and this, with the three drachms given by the nurse, left a balance of an ounce and a half, representing three hundred grains of bromide of potassium, taken by the patient at one time. The nurse did not comprehend the situation, and no one was notified of the mishap. Patient continued in stupor, without convulsions or paralysis, until 10:30 P.M., when she died, twenty-eight and one-half hours after taking the potassium bromide.

The autopsy was made forty hours after death. No œdema or rigor mortis present. Thorax.—Pericardial sac contains half an ounce of clear serous fluid, normal in appearance. Heart of normal shape and size. Both ventricles flabby. Right ventricle does not contain a trace of coagulum. All the blood is in a liquid condition. The same is true of the left ventricle and the auricles. Pericardium natural. Endocardium and valves normal. Left ventricle contains a little liquid blood of bright-red, arterial color. Blood from venæ cavæ is liquid, and dirty, dark-brownish red in color. Lungs.—Left pleural cavity contains a little clear serous fluid. Left parietal and visceral pleuræ normal. Left lung, upper lobe, normal. Lower lobes a little more filled with blood than normal. A little commencing hypostatic pneumonia and some puriform fluid in bronchial tubes. Right lung, upper lobes normal. In lower, some hypostasis, but no pneumonia. Blood from venæ cavæ, microscopically examined: red blood-corpuscles not discernible as such, but instead, find irregular clusters of pale-red

color, in which the shape and outlines of blood corpuscles cannot be discovered, and which look as though a number of softened blood-corpuscles had been melted together. Blood from ventricles of heart shows distinct outlines of red blood-corpuscles not united in rolls. The blood-corpuscles here are somewhat pale, and the circumferences mostly crenated. Abdominal cavity contains no fluid. Peritoneum, parietal and visceral, perfectly normal. Spleen normal in shape, size, and appearance. Liver normal in shape and size; a little pale and flabby. Tissue on cut surface somewhat pale and flabby from a little cloudy swelling, otherwise natural. Mucous membrane of mouth, tongue, palate, and pharynx natural. In lower half of œsophagus are found numerous small erosions of epithelium, in size from a point to a pin's head, and further down, near the cardia, larger surfaces of epithelium are thrown off. No signs of gastro-enteritis. Commencing decomposition. Mucous membrane of duodenum normal; of upper part of jejunum and rest of ileum, colon, and rectum perfectly normal and healthy in appearance. Kidneys normal in shape, size, and appearance, except that the tissue is a little flabby, and somewhat pale. No nephritis. Bladder empty; mucous membrane normal.

In the cranial cavity, a clot was found between the dura and pia over the right hemisphere, a black-brownish adherent membrane lined the corresponding parts of the dura, and on the left side, finer reddish membranous films were discovered. The right cerebral hemisphere was compressed, and driven to the left somewhat. The lateral ventricles were dilated slightly, their contents clear, and endyma healthy; the cerebral tissues, aside from an imbibition near the hæmatoma, as well as the blood-vessels, appear healthy.

The morbid appearances to be expected in a case of such poisoning as was suspected to have occurred in this case are briefly stated as follows: Liquid, dark-colored, non-coagulated blood, flabby, uncontracted heart, the walls of which present a little cloudy swelling. Aside from this, all the organs of the body should be perfectly healthy in appearance, *cæteris paribus*.

The writer of this careful and exhaustive post-mortem analysis concludes by saying that, from a medico-legal point of view, he would not hesitate to state to a coroner's jury that the patient came to her death by the natural termination of a disease of the dura mater, and that, consequently, no one could be held accountable for her death. Her previous epileptic attacks, and the final brain symptoms, stupor, delirium, slow pulse, and lowered

temperature, may all be rationally accounted for by the anatomical conditions found: Chronic hemorrhagic pachymeningitis, with hemorrhage and compression of the brain. Nothing is known of such an action of bromide of potassium as would permit us to attribute the appearances found in the cranial cavity to the over-dose given; on the contrary, experiment teaches that large doses cause lowered-blood pressure, lowered temperature, and a slow pulse. Speaking against extravasation, Dr. Fenger does not devote any special consideration to the condition of the corpuscular elements of the blood; certainly the appearances found are those of a very fresh pachymeningitis, and he does not mention a relation between a blood disorganization and an arachnoid hemorrhage of a passive character as a possible contingency.

5. This article gives the results of the microscopical examination of the brains and cords of twenty dogs who had had hydrophobia. Preparations were made from both hardened and fresh specimens. Macroscopically there was, in most cases, an arterial hyperæmia of the cerebral and spinal pia mater, occasionally also an œdema thereof. Microscopically the infiltration of the nervous system was found to be localized, as, for instance, in the corpora striata, optic thalami, medulla, cord. The hemispheres were seldom infiltrated to any extent. The pathological alterations were principally in the walls of the vessels, to a more limited degree in the interstitial tissue, and in the nerve-cells and nerve-fibres.

The vessels were everywhere dilated, filled with white blood-corpuscles. In some, the white corpuscles obstructed the lumen, this happening especially in the capillaries and small veins In most of the arteries, veins, and capillaries, there were observed alterations in the walls, which were generally in the length of the whole vessel, less often in infrequent places. The more pronounced alteration proceeded either inwards from the adventitia and the adventitial lymph-space, or outwards from the intima and its endothelium, or they consisted of a diffused infiltration of the whole length and thickness of the vessel with round lymphoid elements. These alterations were characterized by augmentation of the protoplasm of the nucleus and by endothelial proliferation; by proliferation of the connective tissue cells in the adventitia and its infiltration with round lymphoid bodies; when the middle coat had not been affected, there was between the adventitia and the unaltered media a collection of the lymphoid elements; and proliferation of the muscle cells of the media when the coat was involved. Upon transverse and longitudinal sections of vessels

so altered, nothing was seen but masses of round cells, resembling white blood-corpuscles, obliterating the different vessel coats. In the neighborhood of vessels so altered were found hemorrhages.

With these alterations of the vessel walls, there was found a homogeneous, colorless, or somewhat yellow and strongly refracting substance between the different coats. This was deemed, after examination with a variety of chemical reagents, to be of the nature of amyloid substances. With it were grouped together round albuminoid exudative masses. In this amyloid-like substance were imbedded swollen red blood-corpuscles, together with altered ones, and granular pigment. Similar amyloid-like substance was seen in the vessel walls of other organs, as of the nerve (hypoglossus, vagus, sympathetic, etc.), liver, kidneys, lungs, cardiac muscles, and spleen; and the author is convinced that this substance was developed from the elements of the blood, mainly from the extravasated and altered blood-corpuscles, furthermore from the round elements of the vessel walls, and finally from the exuded masses.

7. Dr. N. Popoff, after a series of experiments in Mierzejewski's laboratory, comes to the following conclusions respecting arsenic poisoning: First: That arsenic may, within a few hours after its application, cause an unmistakable alteration of the spinal cord, which may manifest itself either as myelitis centralis acuta or poliomyelitis acuta. Second: That in more chronic cases an inflammation may result, not only of the gray substance, but of the white also, constituting a diffuse myelitis. Third: The peripheral nervous system is unaffected in those cases in which death occurs within three months after the reception of the poison. Fourth: That the paralyses from arsenic poisoning are of central origin. He has had similar results with lead, and believes that in long-continued metallic poisoning, alterations in the spinal cord are very likely to occur.

8. In a case of hypochondriacal insanity, complicated by a menstrual difficulty, with rise of temperature (104°), inability to swallow, and gradual failure of all the functions, *sub finem* peculiar punctiform hemorrhages were found in the white substance following the lines of the convolutions. We fail to see anything novel in the arrangement noted, though it has certainly not been called attention to particularly. In the plate, the same body is designated on one side the Cornu Ammonis; on the other, the Choroid Plexus.

9. This is, the author claims, the only case on record of a ganglionic neuroma of the supra-renal capsule.

CLINICAL CONTRIBUTIONS TO GENERAL NEUROLOGY.

1. Martin **Bernhardt.** Some Observations on the Growth in Length of the Nails in the Healthy and the Sick. Virch. Archiv, 86 Bd., II. Heft.—2. **Boschulte.** A Communication upon Nightmare. Virch. Archiv, 85 Bd., II. Heft.—3. **Canali.** Contributo alle localizzazioni cerebrali. (Gliosarcoma della *1a* e *2a* circonvuluziona frontale.) Rivista sperimentale di Freniatria, VII., 3.—4. **Finger.** Ueber eine constante nervöse Störung bei florider Syphilis der Secundarperiode. Vierteljahrschrift f. Dermatologie u. Syphilis, VIII.—5. A. A. **Foucher.** La papille optique dans quelques affections cérébrales (Suite). L'Union Médicale du Canada. Janvier, 1882.—6. **Gowers.** Epilepsy and other Chronic Convulsive Diseases. Their Causes, Symptoms and Treatment. London, 1881, 8vo.—7. **Hunnius.** Zur Symptomatologie der Brückenerkrankungen und über die conjugirte Deviation der Augen bei Hirnkrankheiten. Bonn, 1881. Cohen & Sohn, 8vo, 91 pp.—8. William W. **Ireland.** On Mirror Writing and its Relation to Left-Handedness and Cerebral Disease. Brain Oct., 1881.—9. **Ladame.** La nèvrose hynoptique ou le magnétisme dévoilé. Etude de physiologie pathologique sur le système nerveux.—10. F. A. **Mahomed.** The Pathology and Etiology of Myxœdema. Lancet, Dec. 24th, 1881.—11. T. W. **McDowall.** Contributed Cases (of ordinary somatic diseases complicating insanity). I. Acute Atrophy of the Liver following Roetheln (?) in a Melancholiac. II. Acute Nephritis and Disintegration of Cardiac Clots. III. Foreign Bodies in Colon—Abscess pointing through Thoracic Wall—Localized Emphysema—Pyæmia.—12. J. P. **McGee.** Genital Irritation and the Neuroses. Mississippi Valley Medical Monthly, March, 1882.—13. Luigi M. **Petrone.** Un caso di rigidita muscolare con lieve ipertrofia dei muscoli. Rivista sp. di Freniatria, VIII., 3.—14. Charles Fayette **Taylor.** Effect on Women of Imperfect Hygiene of the Sexual Functions. American Journal of Obstetrics, January, 1882.—15. **Warner.** Atrophy of the Muscles Supplied by the Fifth Cranial Nerve, with Atrophy of the Orbital Fat on the Same Side. Lancet, Jan. 7th, 1882.—16. **Wherry.** Atrophy of the Left Eye and Paralysis of the Fifth and Facial Nerves. Lancet, January 14th, 1882.

1. This article is intended to be, as the writer expressly states, an addendum to the chapter on the same subject in the work of our distinguished countryman, Dr. S. Weir Mitchell, on "Nerve Injuries."

Observing the fourth finger nail of his own right hand, the author found that it grew 1 millimetre in length in 9⅝ days; the left thumb nail 1 mm. in 8¾ days; the left middle finger nail 1 mm. in 7 days. The left middle finger of a healthy student grew 1 mm. in 7.7 days. In a case of neuritis of the upper extremity the sound little finger required 12 days to grow 1 mm., whilst 19 were required by the diseased little finger. In a neuritis of the ulnar the sound little finger grew 1 mm. in 12 days, the diseased one 8.7 days. In a neuritis of certain branches of the median the nails on the sound and affected fingers grew with equal rapidity. In a neuritis of the median and ulnar the sound nails took 8.6 days to grow 1 mm., the diseased ones 14 days. These observations are simply confirmatory of Dr. Weir Mitchell's observations.

But Dr. Bernhardt does not agree with the American author in the statement that the nails begin to grow again in cerebral paralyses when the movement returns to the fingers. This, he thinks, is not always the case.

In a hemiplegic, the nails grew 1 mm. in 7 days on the diseased side, requiring 6 days on the sound side. In another hemiplegic, the diseased nails grew much more rapidly than the sound ones, growing 1 mm. in 9.3 days, whilst the unaffected ones took 17.5 days.

The healthy nail of the left great toe grew 1 mm. in 14.3 days.

3. A gliosarcoma nearly penetrating to the ventricular roof and involving the upper and middle frontal gyri, in the middle two-thirds of their convexity, on the right hemisphere, was found in a patient who presented the following symptoms during life: Atrophy of the right optic nerve (left nerve intact), cephalalgia, recurrent attacks of mental obliteration, incoherence in conversation, and loss of memory of locality and personal names, although such speech as the patient had was well enunciated. The amblyopia, originally limited to the right side, extended to the left after a time; with this the cephalalgia became more intense. *Sub finem* there were epileptiform attacks involving the muscles of the face for about a minute, followed by comatose periods lasting five minutes, and rapidly succeeding each other. The gliosarcoma could be, as in similar cases, traced to a traumatism.

4. This paper contains an account of the state of the cutaneous and other reflexes observed at and about the time of the secondary eruptions of syphilis. All these reflexes were found to increase considerably immediately before the eruption; after the breaking out of the latter, they rapidly sank, as the author claims, even to the point of disappearing altogether, and did not return

to the normal standard until some days or weeks after the disappearance of the roseola. A recrudescence of the latter was found to be accompanied by a repetition of these anomalies of the reflex phenomena. If there is no error in these observations, they are destined to revolutionize certain views held as to the semiological importance of the reflexes.

8. Mr. Ireland relates several instances of what is termed Spiegelschrift, or mirror-writing, because it is such as would be most readily read by holding it to a mirror. A paralytic imbecile girl, three idiot boys, a para-paretic boy, in the author's range of experience, wrote thus. Of one hundrrd and thirty-four children in one public school who were made to write with the left hand, three wrote the mirror-writing, and all these three were left-handed. Of sixty girls and boys in another school made to write left-handedly, two girls and three boys wrote the mirror-writing, and these, too, were left-handed. A man, trying to write Hindustani, the characters of which run from right to left, unconsciously wrote the mirror-hand. A case is alluded to, of Buchwald's, of a man with an ordinary apoplectic hemiplegia, who presented this peculiarity in his hand-writing. A curious historical fact is related by the author. In the MSS. of the "Codex Atlanticus," of Leonardo da Vinci, preserved in the Ambrose Library at Milan, is a specimen of mirror-writing in the celebrated artist's hand. A certain priest, Antonio de Beatis, travelling, unconsciously for the benefit of a neurology of the future, in the train of the great Cardinal of Arragon, thus visited da Vinci, and states that he had a paralysis of the right hand; from which Mr. Ireland infers that he used his left, and fell into the back-handed ways of mirror-writers.

10. Dr. Mahomed regards myxœdema as a symptom of chronic Bright's disease. In twenty-seven cases which he has collected, in fifteen there was albuminuria or other evidence of Bright's, whilst there was disease of the kidneys in five fatal cases. He explains the presence of mucin in the affected tissues, by supposing that the quasi-embryonic tissues of chronic œdema contain, like other embryonic tissues, a certain quantity of mucin which is developed in their progress towards organization, being greater in quantity as the organization is more perfect. He affirms that the nervous symptoms keep pace with the œdema. The gist of Dr. Mahomed's reasoning is that, because renal symptoms appear in a certain proportion of cases with the other symptoms of myxœdema, therefore the myxœdema is due to the renal disease. He overlooks the important possibility that the renal symptoms, as

well as the myxœdema, may both be due to some underlying condition, and he adduces no proof whatsoever that this possibility may not rise to the dignity of a certainty. According to a notice in the same weekly containing Dr. Mahomed's account, at the same meeting of the Clinical Society of London, December 9th, Drs. Lunn and Cavafy read each the histories of two cases of myxœdema, and Dr. Ord showed a case of the disease.

12. This is a narration of one case of paresis of the right lower extremity, and one case of paresis of the left, both coming on after a malarial febrile attack, and both complicated by adherent prepuce. In both cases, circumcision was performed; in the first case with good result, very temporary in character; in the the second with no result at all. McGee says the first case was, for the time being, an apparently strong evidence of the validity of Dr. Sayre's position, but the patient relapsed into his former state.

13. Reports a case of a boy, aged fifteen, presenting a peculiar tonic spasmodic state of the voluntary muscles, accompanied by a genuine hypertrophy of the latter, and without any other anomaly on the part of the nervous system. The case is analogous to that reported by Dr. Thomsen (Kiel) of his own son, and to other cases reported in young soldiers and other healthy subjects by Leyden, Seeligmüller, Peters, and Bernhardt. The present writer questions, and we believe very soundly, the view of Seeligmüller, that the phenomenon is due to a lesion of the lateral columns, and he also considers the theories of the other observers insufficiently based, without offering any explanation, or attempting one, himself.

14. The gist of Dr. Taylor's paper is contained in one of his concluding sentences, wherein he says: "The first truth to learn is this, that the use of the generative function is a physiological demand. It follows that, when the organs provided for reproduction are not employed, some other demand for the suspended energies, which shall effect a vicarious relief to the unemployed functions, must be established. Accumulated force must find an outlet, or disturbance first and weakness ultimately results." A number of cases are related in support of these views. The ideas are not in themselves absolutely new, but the precision with which they are expressed makes them essentially novel. As affording an explanation of many cases of so-called hysteria, and, what is much more important, as offering a clue to treatment, the paper merits careful perusal; but that it will not do to carry the explanation too far is apparent even from some of the cases related by Dr. Taylor, in which the sexual causation is a pure assumption.

CLINICAL PSYCHIATRICAL CONTRIBUTIONS.

1. Ringrose **Atkins.** A Case of Paralysis Agitans. Journal of Mental Science, Jan., 1882.—2. **Buccola.** Sulla misura del tempo negli atti psichici elementari (Il periodo fisiologico di reazione negli alienati). Rivista sperimentale di freniatria, VII., 3.—3. **Bury.** British Med. Journ., April 8th, 1882.—4. **Claus.** Ueber Erkrankungen des Rückenmarks bei Dementia paralytica und ihr Verhalten zum Kniephänomen und verwandten Erscheinungen.—5. E. **Engelhorn.** Ein Fall von transitorischer Bewusstseinstörung bei einem elfjährigen Knaben. Erlenmeyer's Centralblatt, IV., 21.—6. Archille **Foville.** Note sur la Megalomanie ou Lypemanie Partielle avec Prédominance du Délire des Grandeurs. Ann. Méd. Psychologiques, Janv., 1882.—7. **Gira.** Des hallucinations dans la paralysie générale des Alienés. Thèse de Paris, 1881.—8. J. F. **Goodhart.** Insanity from lead. British Medical Journal, April 11th, 1882.—9. J. G. **Kiernan.** Insanity from Scarlatina. St. Louis Clin. Rec., January, 1882.—10. **Lantor.** (Grandiose Delusions not characteristic of Progressive Paresis.) Thèse de Paris, 1881.—11. E. E. Mackintosh. Mental Excitement in the Lying-in. Edinburgh Med. Journ., April, 1882.—12. Charles **Mercier.** The Nature of Insanity. Journal of Mental Science, Jan., 1882.—13. **Meyer.** (Pseudo-Progressive Paresis of Saturnine Origin.) Thèse de Paris, 1881.—14. Phillipe **Rey.** Tumeur du cerveau avec aliénation mentale (Service de M. Dagonet). Ann. Méd. Psychologiques, Janv., 1882.—15. C. Lockhart **Robertson.** Lunacy in England. Address at the opening of Section VIII. of the International Medical Congress. Journal of Mental Science, Jan., 1882.—16. **Schuele.** Dementia acuta und Stupor. Allg. Ztschr. f. Psych., XXXVIII., 3.—17. **Sozinsky.** Mental Aspects of Infantile Unfoldment. Med. and Surg. Reporter, March 25th, 1882.

1. A patient suffering from paralysis agitans experienced sensations of "burning inside" and of his "heart coming up to his mouth" for several years, then he exhibited periods of depression in which he was lachrymose, and his morbid visceral sensations became so intense as to assume the character of illusions.

3. Dr. Bury reports three cases of dementia from hereditary syphilis. One, a girl of fourteen, "snuffled when a baby and was covered with brown spots." There was a distinct family history of syphilis, but none of epilepsy or insanity. There were scars at the angle of the mouth, a shallow notch in the edge of each upper incisor, and also advanced disseminated choroiditis. Her memory had

been failing for the past three years, and there were other evidences of progressive dementia. There was slight tremor of the tongue and cheek muscles, and partial loss of control over micturition. Dr. Bury claimed that syphilitic arteritis in these cases resulted in diminishing the nutrition and thus causing brain atrophy.

4. The writer was enabled to test Westphal's assertion, that absence of the tendon reflex is pathognomonic of sclerosis of the posterior columns in progressive paresis, by making a careful comparison of nineteen cases which he studied both during the lives of the patients and after their deaths. In all cases where pronounced sclerosis was found, the knee-phenomenon had been absent. In several instances, where the sclerosis did not extend below the sixth dorsal nerve-level and even in two, where slight sclerosis extended into the lumbar portion of the cord, the phenomenon was present. In another group of cases, where sclerosis of the posterior columns was either absent or ill-marked and the lateral columns were degenerated, the phenomenon was pronounced or exaggerated, especially with exacerbations of the malady, such as the paralytic attacks. The influence of such attacks, ordinarily termed "apoplectiform" attacks by English writers, was also observed where the reflex was nearly abolished by the spinal lesion, becoming better marked therewith. The same influence is attributable to the so-called epileptiform attacks (this is a strong argument in suppport of the position of those who assume a vascular stasis and consequent hemispheric malnutrition as the common basis of both phenomena). Where the attacks were unilateral, the tendon reflex was occasionally most marked on the affected side. The inference is a just one, that where the tendon-reflex cannot be evolved even during apoplectiform and epileptiform attacks, that the sclerosis has affected the posterior columns in the lumbar altitude and to an extreme degree.

Where degeneration of the lateral columns was the sole or predominant spinal lesion, Dr. Claus found a different kind of gait from that manifested by paretics who had pronounced posterior spinal sclerosis. In the latter the ataxic character was discoverable, but in the former the gait had rather a paralytic character, and it is in such cases that the evident paresis increases till the patient loses the power of walking altogether. Only in a very few cases did the gait approximate the spastic character, and on the other hand there was found, even with patients whose posterior columns showed slight degeneration, rather a paretic than an ataxic walk. Somewhat novel is the author's supposition that a degen-

eration of the lateral columns may progress up the pyramidal tract to the cortex. Although the author believes that the clinical picture of a subdued spastic paralysis may be more frequent with progressive paresis than is ordinarily supposed, it does not appear that he was himself able to make any diagnostic inferences during the lives of his patients as to the state of the lateral columns, and this with any degree of certitude. When it is borne in mind, too, how easy it is by careful search to determine slight alterations in either the lateral or the posterior columns of paretics, the margin of error must be apparent. Westphal has recently affirmed quite positively that the tendon reflex disappears when the external part of the posterior columns is involved; Dr. Claus furnishes the interesting statement bearing on this claim, that where the tendon reflex remained, in cases of posterior spinal sclerosis, involving the lumbar enlargement, the sclerosis occupied the innermost portions of those columns only. This is strongly corroborative of Westphal's claim.

5. A little boy aged eleven, in whose family there was no hereditary taint, but whose nervous organization had been put on the rack, through repeated misfortunes and misery in the family, was slightly injured by an explosion of gun-powder which killed a brother. As the cause of the explosion was unknown, an official inquiry was made, and the boy was examined by the judicial commission undertaking it. The anticipation of the examination as well as the examination itself threw him into a high state of excitement; while his wounds were being examined, he sank back in bed, lay motionless with closed eyes and paying no attention to his surroundings, then he suddenly rose up in bed, opened his eyes, looked apparently into the distance and began to recite biblical verses and mortuary religious songs ecstatically, unmindful of the interruptions of his surroundings; with this there was slight waxy immobility of the members. The face was somewhat flushed, the pulse 92, and the temperature normal. A few minutes later he sank into a deep sleep of an hour's duration, from which he awoke perfectly rational, though somewhat lachrymose, and without the slightest recollection of his ecstatic spell, unless it were the impression that he had had a dream, whose contents he endeavored in vain to recall. While presenting some analogies to the ecstatic states of hysterical and epileptic patients, this attack should not be ranged under one head with these, inasmuch as there were no previous or subsequent signs of a neurosis, and the high mental strain acting on a susceptible child was a sufficient cause to account for it.

8. Reports four cases of insanity from lead poisoning, and agrees with Rayner, Savage, and Kiernan in believing that lead may give rise to both progressive paresis and other less pronounced psychoses. According to him, the sequence of events is as follows: introduction of lead; vascular tension; arterial spasm, followed by convulsions or mania, leading to permanently impaired nutrition of the brain by reason of a permanent spasm of the cerebral arteries.

9. After detailing the histories of five cases of insanity following scarlatina, including that of two sisters in a neuropathic family, the author states that from the cases observed by Mendel, Kräpelin, Rabuske, and himself, it seems safe to conclude that three groups of mental phenomena are produced by scarlatina independently of delirium, two of them being classifiable as insanity, while the third is not. The first is a species of melancholia agitata, attended by hallucinations, and its inception is preceded by a decline to the normal of the high temperature previously existing; the second group consists of cases of dementia, due to meningitis of scarlatinal origin, the patient passing from the hyperpyrexia of scarlatina to that of meningitis, on recovery from which he is found to be demented; the third group of patients show either marked change from the character antecedent to the attack of scarlatina, or else retain in after-life some of the juvenile characteristics of the period prior to the attack of scarlet fever. The author seems to have overlooked a well-observed case reported in Bucknill and Tuke's Manual.

11. Discusses the peculiar physical phenomena manifested by seduced and deserted females during the period preceding parturition, and the peculiar effect this has on the physical condition of the patient, especially the dread of possible exposure on being recognized after the first temporary depression has passed away.

14. A male patient who, at the age of seventeen, had sustained a fall, alighting on his head, and not followed by any immediate consequences but a momentary dizziness, then served as a *garde-mobile* in the campaign of 1870–71, suffering much with the severe cold, began after this period to complain of violent pain in the head, followed by vertigo and successive paralysis of the right arm and leg. Vision next became enfeebled, and finally lost; finally deafness ensued. With this the patient became irritable, malicious, and had to be placed in an asylum. Here it was found that a visible swelling of a soft consistency was present in the median

posterior portion of the head. There was double optic atrophy, and some protrusion of the ocular globes. The patient was ordinarily passive; when his head was touched, pain was produced; and sometimes spontaneously, without any one being near him, he would address himself to imaginary persons, enjoining them to leave him alone, sometimes coupling his requests with vulgar epithets. A serous fluid was subsequently noticed to escape from the nose; subsequently this fluid became sanious, the skin became hot, the pulse frequent, and thirst was manifested; no thoracic or abdominal disorder could be detected. The patient died at the age of twenty-three; an incision over the enlargement exposed a yellowish purulent and semi-fluid mass; underneath, a spongy, bony mass was found, as big as a nut, adherent to the dura, and which had been separated from the cranial vault at the posterior third of the sagittal suture. On incising the dura, a large tumor was found at the corresponding point not adherent to that membrane; this tumor rested on the parieto-occipital region of both hemispheres, more on the left than on the right; the cortex was depressed, slightly softened, but not adherent to the growth, which appeared to be sarcomatous. A bloody serous accumulation was found under the frontal lobes, over the cribriform plate especially. There was no other lesion; the question is raised whether the tumor and the ostitis were both due to the fall on the head. The writer is in error in stating his case to be the first of the kind; there are several such on record, and the etiology in all seems to have been similar.

15. The number of the insane in England is seventy-one thousand, being in the ratio of one in three hundred and fifty of the population. Of these, about ninety per cent are paupers, and maintained at the public cost. The author refers to his previous demolition (*Journal of Mental Science*, April, 1869) of the popular fallacy that insanity is on the increase, and ascribes the increase in the registry, which rose from 1 : 800 to the present figure within thirty-five years, to other causes. It is absurd to insist on asylum treatment for all classes of the chronic pauper insane, and in the parish of Brighton, distinguished for its wise and liberal administration of the Poor Law, thirty-six per cent of its insane poor are in the workhouse wards, and fifty-five per cent only in the county asylum. Dr. Robertson goes so far as to say that no county should provide for more than fifty per cent of its insane in the asylum.

16. Polemicizes against the claim of Binswanger, as set forth

in the sixth annual volume of the Charité annals, that only those rare cases can be properly classified as acute dementia, in which dementia is quite suddenly and directly developed, and which is distinguished from terminal dementia and acute "imbecility" by its curability, and resembles stupor only in its exterior characters. In addition to these murky criteria, Binswanger advanced the statement that all those cases cited by recent writers as cases of of acute dementia, really appertain to stupor, which may be an independent symptom, or an episode of other psychoses. He distinguishes stupor from acute dementia, on the ground that in the former there is only a suspension or obscuration of the mental processes, in the latter an absolute destruction. Schüle, although admitting that the demonstrable existence of clinical links between these alleged forms does not disprove the justification of Binswanger's discrimination, yet fails to find any positive justification for it, doubts, as we do, whether a "destruction" of mental elements can be intrinsically distinguished from a corresponding "obscuration," and asserts that both alleged forms may lead to the same termination. He proves the correctness of his position by histories of cases, presenting all of Binswanger's criteria claiming to separate given cases from acute curable dementia, and which yet finally ran the same course. The first case cited to prove this position is that of a girl aged twenty, whose mother had once suffered from puerperal melancholia. She was quiet, of retiring disposition, and somewhat limited in her mental horizon. Her psychoses began under the mask of nostalgia, and broke out in a lachrymose spell, in which she stated that she had caused misfortune to all her surroundings, and could not live any longer; her depression increased; she asked to be killed, and made an ineffectual attempt at self-strangulation. In the asylum, she was found dreamy, and presented illusional misinterpretations of her surroundings; her pulse is soft, about 100. At night, she was somewhat excited, caught the nurse by the throat, then laid down, winking her eyelids, opening her mouth, and keeping it so by the hour, placed the feet extended stiffly against the wall, and repulsed every attempt to approach her, but without method. Consciousness remained profoundly disturbed; the patient alternated between these passive states and sudden aimless explosions, in which she jumps up, calls the nurse by opprobrious epithets, and refuses her assistance. The pulse then rose to 120, the congestion of the head increased, and a herpes labialis appeared; a bath of 25° C. quieted her, and she passed into a stupor of five hours' duration, with complete immobility.

Similar phases returned, hallucinations of hearing were manifested, and occasional lucidity appeared. A remarkable state of stupor began on the fifteenth day of her illness, the expression became blank, having previously been dreamy; the pulse sank to 72, and became less full; this inaugurated the attack. She became passive, answered simple questions, but had no initiative, and had to be watched and guided with regard to the excreta. This condition deepened; she failed to respond to questions, except when pressed at certain intercostal points, when she groaned and lisped "Oh, God!" she eats bread all unaided, and with terrible voracity. After she observed that bread was kept in a certain cupboard, and thence distributed to the patients, she, after devouring her allotment, would go to this cupboard, and fumble around at the key-hole for hours. Her voracity increased so that she had to be kept out of the dining-room, saliva dribbled from her mouth, the hands became icy cold and bluish. After four weeks, slight manifestations of mentality appear, exclaims "bread!" occasionally laughs or weeps, she trembles at times, the cyanosis disappears, pulse rises to 84, perspiration occurs, and her expression becomes more intelligent. The cyanosis once more recurred, and a remarkable contrast was found between the small radial pulse (100) and the full, throbbing pulse of the carotids. The stupor increased to such an extent that the bladder had to be emptied by the catheter. Occasionally she would dance around for hours on the same spot in an automatic way; her bodily nutrition increased in a surprising degree. About four months after, her menses appeared for the first time since her illness, and were very copious, exercising a good influence on her condition; with every recurrence of the menstrual flow, her condition improved. She was discharged convalescing, and made a perfect recovery at home, with imperfect recollection of her diseased period. The fact that this patient exhibited Binswanger's criterion of functional torpor, and yet had a slight period of preceding exciting, is utilized by Schule to demonstrate its insufficiency.

Other cases are cited of "vaso-motor" stupor of transitory appearance, lasting a few days and passing into acute curable dementia. Schule discriminates symptomatically between a stupor of psychical and one of direct organic origin. The former is the product of functional inhibition, due to hallucinatory and melancholiac overwhelming of the mental sphere, especially in an invalid brain; it presents transitions to ecstasy and catalepsy, and many analogies to hypnotism. In the second group, we have the stupor caused either by sudden shock after severe febrile or puer-

peral disease, in epileptic insanity, or intercurrent in periodic maniacal paroxysms. It was once observed by the author with cyclothymia. It is a common form of the psychosis of exhaustion, and is of that nature with most of the causes above cited. We cannot follow the author in his speculations regarding the stupor of katatonia, as he persists in the unfortunate view that this is a form of "Verrücktheit" and a constitutional psychosis. Otherwise, the paper is a valuable one, both in its facts and speculations.

THERAPEUTICAL CONTRIBUTIONS.

1. **Becoulet.** Etude sur la Non-Restraint. Ann. Méd.-Psychologiques, Janvier, 1882.—2. **Bernhardt.** Report on Discussion of Dr. Langenbuch's Paper on Nerve-Stretching in Tabes Dorsalis. Centralblatt f. Psychiatrie, Feb. 15th, 1882.—3. **Kollner.** Vorläufige Mittheilung über den Einfluss des Atropins auf epileptische Kranke. Allg. Ztschr. f. Psychiatrie, XXXVIII., 3.—4. Wm. J. **Morton.** A Contribution to the Subject of Nerve-Stretching in Lateral Sclerosis, Paralysis Agitans, Athetosis, Chronic Transverse Myelitis, Sciatica, Reflex Epilepsy. Journal of Nervous and Mental Diseases, Jan., 1882.—5. **Oebeke.** Ueber Schädeleinreibungen bei allgemeiner fortschreitender Paralysis. Allg. Ztschr. f. Psychiatrie, XXXVIII., 3.—6. Sidney **Ringer.** Concerning the Action of Chloride of Sodium, Chloride of Ammonium, Chloride of Potassium, Bromide of Sodium, Bromide of Ammonium, Bromide of Potassium, on the Ventricle of the Frog's Heart. Practitioner, Jan., 1882. 7. Th. **Rumpf.** Zur Behandlung der Tabes dorsalis mit dem faradischen Pinsel. Neur. Centralblatt, 1882, 1.—8. Geo. L. **Walton.** Report of Four Cases of Nerve-Stretching for Affections of Spinal Cord in the Clinic of Prof. Thiersch, Leipzig. No Beneficial Result. Boston Med. and Surg. Journ., March 2d, 1882.

1. The discrimination between restrainers and non-restrainers seems to Dr. Becoulet not so much offensive as it is puerile, for it has no real existence in France. French psychologists all recognize the non-restrainer Pinel as their master, and all alienists should be Conollyites with Conolly, but not with Gardiner-Hill and Magnan, who have improperly substituted absolute for relative non-restraint. We question whether Magnan can be properly called a radical non-restrainer, for he has himself devised a strait-jacket which seems to us one of the most humane appliances in its way.

2. An interesting discussion was had at the Berlin Medical Society, Jan. 25th, 1882 (*Centralblatt f. Nervenh., Psych., u. gerichtl. Psychopath.*, Feb. 15th, 1882), after the reading of a paper: Nerve-Stretching in Tabes Dorsalis, by Dr. Langenbuch. Westphal spoke of the case of spastic spinal paralysis in which he had done nerve-stretching. Death following, circumscribed foci of myelitis were found in the lumbar cord.

Starcke had operated on a case of similar nature, stretching both sciatics. Result nil. He had seen a case of Langenbuch's, but it was acute in its origin, and could therefore scarcely be a genuine spastic spinal paralysis. In regard to the worth of the operation in locomotor ataxia, Westphal spoke of the following cases:

1. Highly ataxic female, suffering seven years; brachial plexus stretched by Langenbuch; unsuccessful. 2. Male; tabes since 1872; both sciatics stretched; at first sharp pains, which decreased later; ataxia unaltered. 3. A patient operated on by Langenbuch was seen later by Westphal. Before the operation, the man could ascend two flights of stairs; after operation he was unable to do this. 4. Case of amaurotic tabes, operated on by Langenbuch. Ataxia unaltered, although the patient thought he could walk better. Compression feeling around body was said to be decreased; objectively Westphal could see no alteration. 5. Case operated on by Hahn. Both crurals and sciatics stretched. Cold feeling in limbs improved slightly; also pains, but only temporarily; relapse. 6. Westphal knew of one patient in whom Langenbuch had, in the course of six months, stretched both crurals, both sciatics; then cut out a piece of the peroneal; later, another from the plantar; finally, one toe—site of pain—was amputated. The general health of the patient had suffered severely. Pains were not altered. Langenbuch intended now to make section of one sciatic. 7. In a case seen with Israel, no effect from the double-sided sciatic stretching.

Westphal then spoke of the cases of paralysis agitans which are tabulated in the editorial of this issue; he also referred to Nussbaum's case of intercostal neuralgia, whom he saw later, afflicted with excruciating pain. In a case of brachial neuralgia, Langenbuch stretched the ulnar, later the median and radial, without the least success. Stretching of both sciatics in a case of sciatica had temporary effect; same in stretching of sciatic for same trouble. Another brachial neuralgia was thus treated unsuccessfully.

Bardeleben had stretched both sciatics for Leyden. Healing

by first intention; unsuccessful. Advised stretching crural as high as possible, as the nerve often split high up into three branches. In two cases of tabes, operated on for Frerichs' clinic, there was no result, as was also the case in stretching both brachial plexuses for Leyden, in a case of paralysis agitans. In another case of paralysis agitans, brachial plexus stretched, there was temporary improvement for five days, then relapse. A radial paralysis was produced. Bardeleben saw good results in two cases of neuralgia, one infraorbital, the other infraorbital-alveolar; in latter, one year having elapsed since operation. Herr Küster had operated on a case of tabes sent him by Senator, but without success; in another, the pains ceased. Had stretched ulnar for traumatic neuralgia, only temporary relief; stretching of a sciatic (neuralgia after gun-shot wound) was at first unsuccessful; second operation, however, gave long-continued relief. An obstinate idiopathic sciatica was greatly improved, but only a short time had since elapsed. A stretching of crural in tetanus was unsuccessful; patient died. Bardeleben had stretched the sciatic unsuccessfully in tetanus. Herr Senator, referring to the case of tabes spoken of by Küster, said that the pains were lessened for weeks, although no definite success was obtained. Herr Israel spoke of three cases of tabes. One, unsuccessful, had been spoken of by Westphal. In another case, there set in enormous muscular weakness after the stretching, later epileptic attacks. In a third case, sciatic stretched, there was marked temporary success. When it became accidentally evident to this patient that he had often been free from pain in the past, the improvement began to decrease. Later, this patient's ataxia caused him to fall, and he fractured his patella. The rest in bed thus rendered necessary thereupon improved all the symptoms in a most remarkable manner. Israel had stretched both sciatics in a case of congenital spastic contracture of the limbs; there appeared a flaccid paralysis of the extensor quadriceps, *i. e.*, in a region not directly touched by the stretching, and the speaker regarded this as evidence of a central lesion, caused by the operation. In a case of paraplegia, from vertebral lesion, no success. Herr Hahn had performed twenty-five stretchings; nine cases of neuralgia, with varying relapses. Twice facial stretched in tic convulsif, one with scarcely perceptible result, in the other good. In three cases of tetanus and trismus, the ulnar was twice stretched, once the sciatic; all unsuccessful. Twice was the sciatic stretched, with good results (four months since), in epilepsy, but the attacks came again. In genuine tabetics, no success; a

temporary one in a case of probable spastic spinal paralysis. Herr Remak had not been able to perceive any improvement in the six cases of tabes reported as improved by Langenbuch. Speaker called attention to the spontaneous remissions common in tabes; he also, in opposition to Langenbuch and Westphal, would dwell upon the frequent beneficial effect of the constant current in tabes.

At the meeting on February 18th, Herr Langenbuch called attention to the successes in stretching that were admitted by his opponents, viz.: in the case of Sobeck, spoken of by Westphal, and a case of Israel's, operated on by Sonnenburg; he was also reminded of seven patients, of whom some had been greatly improved. Admitting many failures, especially of his own, he yet thought that, in a newly cultivated region of therapeutics, a few positive facts were of more value than many negative ones. Every new method must pass though a period of probation. Herr Bernhardt spoke of there being doubt in regard to the diagnosis of tabes in several of Langenbuch's cases. He also referred to two operations by Müller on tabes, both unsuccessful, both dying, one from pyæmia, the other from an old cardiac lesion. Herr von den Steinen: A typical tabetic, of eight years' duration, had both sciatics stretched by Langenbuch. Pains in the anus remaining still. Langenbuch proposed stretching the sphincter ani. In other case given to masturbation, Langenbuch stretched both pudendal nerves; patient died comatose, high fever having existed for several days. Herr Westphal would not deny the success in the Sobeck case; but there were acute cases of spastic spinal paralysis that could be intermittent and disappear. No cure had as yet been affected in tabes; the improvement of single symptoms was doubtful; this was not always the case in regard to the pains. Nerve-stretching is no cure for tabes. Langenbuch: In regard to the case spoken of by Bernhardt, he would say that he would hardly stretch all four nerves again in a similar case; he would do other things. As he had been his own teacher, he had to do many things which a riper experience would do otherwise, or not do at all. In regard to case alluded to by von den Steinen, he had thought the anal pains were due to demonstrable fissure. The bloodless widening of the sphincter ani was a well-known procedure. Had operated on a 26-year-old female, stretching optic nerve for blindness. She could now perceive light. Westphal-Shelske, who had seen the patient operated on by Langenbuch for blindness, attributed the return of light perception to the long confinement to darkness. The results from nerve-stretching were no

other than such as could be obtained from other methods of treatment.

3. After referring to the older observations of Hufeland, Theden, Stoll, Trousseau, Skoda, and the more recent studies of Soetlis, in the clinic of Leidesdorf, which established the fact that belladonna and its alkaloid have a decided influence on epilepsy, and expressing the view that the contradictory and unsatisfactory conclusions of various authors are attributable to a lack of proper individualization of observations, the author proceeds to detail his experience. He observed that in many epileptics the pulse just prior to the attack was full, peculiarly soft, of a frequency of at least eighty-four. In others it had all these characters, differing, however, in the tension which was high; at any rate, the pulse just before the attack differed from the pulse normal to the particular individual. With this change of the pulse, there was always narrowing, never dilatation of the pupil. During the attack proper, all these phenomena are notoriously reversed. Inasmuch as, according to Schroff and his pupils, the effect of atropine on human beings is first to slow, and then to accelerate the pulse, it seemed rational to attempt the suppression of the contrary state of the circulation in epileptics, and thus to nullify the attack. Dr. Köllner's experience was moderately encouraging, the use of atropine (subcutaneously) modified the pulse, the character of attacks and even the mental state of epileptics favorably. The quantity used was 0.001 except in one case where twice that amount was given, and it may be noted that this dose produced no toxic symptoms. In only a few of the cases were the attacks prevented or much postponed, but in all they were less severe, and what was most gratifying, patients who ordinarily, even under bromides, were stupid, unclean, or maniacal after the fit, came out of it in a fair mental state when atropine had been administered.

4. The first patient who was operated on was a sufferer from spastic spinal disease. On page 136, the statement is made: "Sensation of all kinds is intact; there exists neither anæsthesia nor paræsthesia." And then follows immediately this paragraph: "There is no pain excepting a slight soreness or sensitiveness of the soles of the feet." Again, on page 137, we are informed of the same case, after the sciatic nerve had been stretched: "*The tingling which previously existed* in the tips of the fingers had also disappeared."

The diagnosis in the fourth case was that of chronic transverse myelitis. We are told that there was ' much wasting of the muscles," "atrophy of the muscles," and yet the "electric irritability

of nerve and muscle was neither quantitatively nor qualitatively altered." This is certainly a valuable discovery, destined, we think, to excite more interest than the question of nerve-stretching itself, and to Dr. Morton belongs the distinction of having placed on record the first case in which marked muscular atrophy has been unaccompanied by quantitative or qualitative alteration in the electric reaction.

Narrating case 5, one of sciatica, it is mentioned on pages 152, 153: "Then pains left (three months ago) and patient worked hard at laboring work for about three months, until three weeks ago, when the pain behind trochanter returned, but not so severe as before." The chronological computations are somewhat elaborate, it may be noticed. The patient was admitted to the Roosevelt Hospital, and treated with the actual cautery; Dr. Parmly writes that this application "certainly helped him very much." He eloped from the hospital in a short time, and passed under Dr. Morton's care. Static electricity was used for three weeks, "relieving the pain absolutely for about twenty-four hours, and then a relapse." The left sciatic nerve was then stretched, the symptoms at once relieved, and three months after the patient was deemed cured. The history extends no further. On page 157, referring to this man, the writer says: "In the case of sciatica I think it is safe to say that no other known measure could have effected relief as quick, and at the same time as permanent." There are those who may doubt the safety of this conclusion when the foregoing facts, and especially the spontaneous cessation of pain for three months, the precise period of relief after the nerve-stretching, are borne in mind; and the same sceptics may question the propriety of heading this case as: "Idiopathic sciatica; nerve-stretching; *immediate and permanent cure.*"

Case 6, of so-called "reflex epilepsy," was observed for only ten days after the stretching of the brachial plexus, and the number of fits were diminished from sixteen or twenty daily to three and four. The author is of the opinion that great improvement was effected here, for, after speaking of the case of sciatica in the terms we have cited, he says: "In the other cases great benefit was derived." The number of drugs in the pharmacopœia which will bring about an equally great benefit in epilepsy for this length of time would run up to the dozens, and there are a few well-known remedies which usually cause far greater improvement. Static electricity acted most remarkably upon most of these patients, when other remedies had been tried in vain. Thus, Case 2, paralysis agitans, would, after the application of sparks for fifteen

minutes, "gradually straighten up, with the head free and more easily rotated, the trunk erect, and the legs straight; his speech would become clearer and the trembling less; the flexion even of the third toe, commonly present, would disappear. The results thus produced remained often as long as twelve hours, and since no other treatment for paralysis agitans had effected this much, either for physician or patient, the case was satisfactory to both for about one month." All this was the more satisfactory because hyoscyamine, which so seldom fails to produce temporary amelioration, had been signally useless. Again Case 3, athetosis, was markedly improved for a few weeks; and Case 5, the oft-mentioned sciatica, was, as has been stated, in this way absolutely relieved of pain for about twenty-four hours at a time, during some three weeks before his nerve was stretched. At first sight it would almost seem as if the writer might have some reason for being biassed in favor of this form of electricity; but then only three out of the six patients derived so much benefit, although these were all in whom it was tried. Of the six cases, then, the one of spastic spinal paralysis was greatly benefited for ninety-four days—was indeed a most notable cure—the one of athetosis for seventy days, that is, the history extends no further, was also strikingly bettered; the case of transverse myelitis remained better for a month, and then relapsed; the case of paralysis agitans was, so far as the history informs us, slightly improved for thirty-three days; whilst, as we have already stated, the results in the sciatica and so-called reflex epilepsy were extremely uncertain.

5. As the ointment of tartar emetic usually employed in progressive paretic dementia produces severe and extensive inflammation, febrile disturbance and pain, the author tried a different application, having the similar object of counterirritation: corrosive sublimate, cantharides, liq. stibii. chlorat., each one part, basilicon ointment four parts. The hair is shaved on an area the size of a silver dollar, the ointment rubbed in every five or six hours for twenty-four hours, and then poultices applied. Generally the tissues become tumefied, partial necrosis, and later suppuration occur. The application was made over the "motor centres" of the extremities showing convulsions or other disturbance. The ointment (termed *Ung. acre*) was tried in five paretics and one case of cerebral hemorrhage. In all of the former, at least temporary improvement of the motor symptoms was noted; in two the general progress of the disease was not influenced, in one the patient lived nearly six years after the inunction. In no paretic were the mental symptoms improved at all. Inasmuch as

the cases were all such of the fully developed disease, and in which epileptiform and apoplectiform attacks had previously appeared, the improvement in the motor field is attributed to the therapeutical measures taken. In the case of cerebral hemorrhage in which the same ointment was tried, a temporary mental improvement was decided, and the patient lived seven years after the application. It seems to us, however, that the author's results are not very encouraging, and that any ulceration maintained in other parts of the body would have the same effect. We note with interest the author's statement, that a paretic whom he reported as cured in the thirty-sixth volume of the same periodical, after living for three years in the bosom of his family, in apparently perfect mental health, returned to the asylum, and died there in an apoplectiform attack.

7. After a thorough systematic and long-continued (over a year) use of the faradic brush, a patient, who presented the characteristic evidences of posterior spinal sclerosis, lost the lancinating pains, his reduced tactile sensibility became normal, and his ataxia disappeared. Most remarkable of all, the tendon reflexes of the upper extremity, as well as the plantar reflex which had been absent, returned. The patellar reflex which had been absent, remained so, however.

8. First case: Spastic spinal paralysis. Male. Thirty-five. Six years' duration. Both sciatics stretched; done so that patient was lifted by the buttocks from the table. Suppurative healing. Temporary improvement, but after fourteen days the condition was same as before. 2. Lumbar myelitis. Male. Twenty-eight. About four years' duration. Slight increase of paralysis after operation. Suppurative healing. Both sciatics stretched. No improvement, although history extends twenty-two days. 3. Locomotor ataxia. Male. Forty-nine. Twenty-two years' duration. Both sciatics stretched. Slight improvement in sensation and tabetic symptoms, also in patellar reflex, but old condition returned at end of four months. 4. Locomotor ataxia. Not very advanced. Male. Middle aged. Both sciatics stretched. Slight improvement in sensation, but speedy relapse.

MEDICO-LEGAL CONTRIBUTIONS.

1. A. **Giraud.** Revue de médecine légale. Ann. Méd. Psychologiques, Janv., 1882.—2. Wm. A. **Hammond.** Reasoning Mania: Its Medical and Medico-Legal Relations, with Special Reference to the Case of Charles J. Guiteau. Journ. of Nerv. and Ment. Dis., Jan., 1882 (see Society Proceedings of this issue).

—3. James G. **Kiernan.** Medico-legal Relations of Epilepsy, a Study of the Hayvren-Salter Homicide. Chicago Medical Review, Feb. 1st, 1882.—4. **Krafft-Ebing.** Zur "conträren Sexualempfindung" in klinisch-forensischer Hinsicht. Allg. Ztschrift. f. Psychiatrie, XXXVIII., 2 and 3.—5. **Lancet** (Editorial). Insanity as Cause for Divorce. Lancet, Dec. 31st, 1881.—6. H. **Obersteiner.** Ueber das neue niederländische Irrengesetz. Erlenmeyer's Centralblatt, 1882, 2 (reprint from the author).—7. **Philo-Indicus** (Pseudonym). Emotional Insanity with Homicidal Violence. Journal of Mental Science, Jan., 1882.—8. A. **Vallee.** Expertise médico-légale dans le procés Hayvren. L'Union médicale du Canada, Janv., 1882.

1. Relates a number of acts of incendiarism committed by impulsive lunatics (pyromaniacs), imbeciles, and dements. In the course of his introductory remarks, Dr. Giraud states that he has not found any cases recorded where the incendiarism was simply due to carelessness on the part of a dement or imbecile, such cases being related by Marc. The first case described is that of G. . . , examined by Delacour, Aubrée, and Lafitte of Rennes. She was a young girl of sixteen, and a genuine impulsive pyromaniac, having started no less than six fires within a few days, generally giving the alarm herself. She was tall for her age, of feeble constitution, anæmic, had supraorbital headache, and had grown with unusual rapidity in the last few years. She answered intelligently, but though she had attended school five years could hardly read, or sign her name or add up a simple column of figures. She knew it was wrong to kill, steal, or light fires, but beyond this she knew nothing and believed she would be safe after confessing; she had recently slept badly and spoken at night, could give no reason for her acts, had had no spite against any one, and was ready to incur the penalty of the law. Two paternal uncles had been feeble-minded. The girl was sent to an asylum; after a time she asked to be discharged, but Dr. Giraud, although believing that the dangerous period of puberty having been passed, the risk of releasing her was small, does not seem willing to answer this question of discharge definitively, as discharged lunatics have burned houses before this. Two cases are related of young people burning houses with no motive, and though of feeble mental development, neither insane nor idiotic. The fourth case is that of a senile dement, who lit his house instead of a fire, by mistake; this case seems to comply with the questioned statement of Marc. A number of other interesting cases are narrated, and a review or the whole question promised by the writer.

3. This is the full report of the trial of an epileptic lunatic whose execution can be called nothing less than a judicial murder. The writer takes ground somewhat similar to that taken in the editorial comment on the case, published in this issue. We glean from Dr. Kiernan's report that there was a junction of the interparietal with the first temporal and the parieto-occipital fissures; and a union of the calcarine with the collateral sulcus. The other features mentioned justify the writer's comment, that the results have but slight value from an anthropological and none from an alienist's standpoint; those quoted here, however, deserve more prominence, and the autopsy on the whole, in agreeable contrast with those made in the cases of Waltz, Troy Dye, Grappotte and Ruloff, was evidently made by one familiar with cerebral anatomy.

4. The disgusting, but from an anthropological, ethnological, and medico-legal point of view important topic of sexual perversion, is once more extensively discussed by this writer to whom we owe the greater part of our scientific knowledge of this subject. It was Casper who first recognized the fact that the inclination of women for women (Lesbian love) and men for men, a perversion afflicting the human race from antiquity, may be of a diseased nature. Westphal questions whether it is always pathological; and Krafft-Ebing believes that this doubt must be carefully weighed. A not unimportant contribution to this subject was made by an intelligent lawyer named Ullrich, who, himself afflicted with this perverse tendency, wrote a book in its defense, claiming that it was justified by natural laws, inasmuch as sexual perversion occurred in certain insects (coleoptera); and he fortified his arguments by the precedents furnished by the classical nations of antiquity. Krafft-Ebing established the unquestionably morbid character of the perversion in a number of cases, by calling attention to the coexisting somatic evidences of degeneration. Up to 1877, only thirteen cases had been reported, since then the author has observed three more and Tamassia an additional one. The first, a nobleman, had an insane father, was himself rachitic, and his mental and physical development was retarded. He was emotional, impressional, inclined to morbid speculation, and after developing masturbatory insanity, complicated by neurasthenic troubles, he was admitted to the asylum, where it was discovered that he was a case of sexual perversion. Already as a boy he had manifested feminine tendencies, disliked boyish sports and preferred dolls and such like. Dating from his thirteenth year he has been fascinated by handsome elderly and later by younger men; his affection was of an intense and partly Platonic character, varigated by fits of

jealousy and despair. He was indifferent to females and delighted in seeing male athletes; seminal emissions and the full orgasm were provoked by embracing or even grasping the hand of "sympathetic" male subject. Having, as Krafft-Ebing expresses it, visited a bordell "*honoris causa*," he failed in natural coitus, and frankly states now that he feels himself a female in all sexual relations. A second case was that of a doctor of philosophy who had been punished repeatedly for indulgence with males. This patient spoke of his unnatural vice with the greatest cynicism, and presented some remarkable revelations with regard to its extent in Italy. According to him, there is a special district in the city of Naples, where the "Effeminelli" lived with their lovers just as the grisettes of Paris live (or lived) with their amants; the "Urninge," as Ullrich originally called those presenting the perversion, on the contrary repel each other. This same patient further protested against the popular notion that the "Urninge" indulge in pæderasty, their *modus operandi* is at most mutual titillation. This patient exhibited the tendencies and many of the features of "original monomania" (originäre Verrücktheit). The third patient, although without hereditary taint as far as discoverable, in his somatic development resembled the first case, in later life dressed in a feminine way, employing the corset, doing up his hair in female style, using cosmetics and powder, and shaving close. The adipose tissue was well-developed, there was left cryptorchidism, and the voice was shrill. In his official opinion, Krafft-Ebing declares this patient to be incurable, that his perverse tendency is due to a nervous defect, that normal sexual functions are impossible, and that he is bound to run counter to the legal enactments and social rules of conduct, on account of his perversion. He does not consider him irresponsible in a legal sense, and as neither fit for, nor requiring asylum treatment; but inasmuch as he shows a tendency to squander his possessions and is feeble-minded, his property should remain in the hands of a curator, and Krafft-Ebing adds, it seems to us in remarkable inconsistency with a previous statement that in measuring his responsibility for any given criminal act, the pathological character of his perversion should be borne in mind, and due allowance made for the same.

In summing up the observations thus far collected, seventeen in all, the author finds that hereditary taint was present in the shape of insanity in the ancestry in thirteen, and in all the cases except one, and in this one case temporarily so, the patients were neurotic and presented positive insane manifestations. Inasmuch as the patients do not as a rule indulge in pæderasty, but abhor it as

much as normal and healthy persons, Krafft-Ebing suggests that the enactments against unnatural intercourse specify and should be limited to pæderasty, abuse of persons under fourteen years of age, and of animals. Thus the sufferers from sexual perversion would be able to follow their tendencies to any extent not involving an injury to the rights of others or public scandal.

7. Refers to the tendency displayed by Eurasians (particularly females) to explosions of violent temper. The term Eurasian is stated to be applied more especially to the immediate offspring of a European father and native (of India) mother, or *vice versa*. While partly a racial characteristic, this high-strung state of the emotions is fed by an unfounded suspicion that the Eurasian is looked down upon, and in the forensic case cited, the young lady had made a violent attack with a scissors on another lady whom she adored and looked up to as a superior being, because the latter did not seem to reciprocate the attachment. She was placed in an asylum, although we doubt, and the author seems to entertain doubts himself, that she was really insane. Without question it was the best disposition to be made of the case.

APPENDIX: REPORT ON CONTRIBUTIONS TO CLINICAL AND FORENSIC PSYCHIATRY BY AMERICAN WRITERS (CONTINUED).

The forensic points involved in the study of insanity have attracted much attention during the past nine months. Perhaps none of the articles devoted to their discussion has excited as much comment as that of Dr. W. A. Hammond,[1] partly on account of the prominence of its author, partly on account of the peculiarity of the views expressed. He takes the ground that the insane are in many cases punishable, and will find but few alienists who will agree with him; while lawyers and the laity will doubtless discover some consolation in the fact that so prominent an authority takes a position which, from the tax-payer's and perhaps the sociologist's point of view, is a very practical and convenient one. But it is to be questioned whether the deterrent effect of punishment can be utilized to advantage with the reasoning lunatic. Punishment to be punishment must be regarded as punishment by the offender! And as with reasoning lunatics the association power is awry, it is therefore at least questionable whether the infliction of certain penalties will be regarded as punishments by them. It will be, even on Dr. Hammond's own

[1] International Review, November, 1881.

premises, proper to inflict the legal penalty only on those reasoning lunatics who exhibit fear when brought face to face with the possible consequences of their acts. This would leave the alienist legislator face to face with the problem of punishing lunatics in whose case the insanity has fortuitously made cowards of the subjects!! With many reasoning lunatics, the class to which Dr. Hammond intends his proposal to chiefly apply, the very punishment of a crime would act as an incentive to its committal. Numerous facts in the medico-legal annals of the past as of the present justify this assertion. Dr. Hammond, for example, says that a lunatic believing his hand to be made of glass is a monomaniac, a dangerous reasoning lunatic, but one capable of committing an atrocious murder, for which he should be held responsible, since the delusion is without reference to the criminal act. Now, suppose that firmly believing his hand to be made of glass, he takes good care of it, relatives and strangers observing his oddity, endeavor to remove the delusion, by striking the alleged glass hand, to demonstrate its infrangibility to the owner; he reasoning that his very integrity as a whole man, nay, his life, is involved in the maintaining uninjured the alleged fragile member, looks upon these feints as attempts on his life, and in subjective self-defence, assaults, perhaps kills a man; what then? In this very case it is evident that the palpable delusion and the homicide might stand apart as apparently isolated facts, and the bond of union be discovered, if at all, only by adroit cross-questioning. Dr. Hammond's other hypothetical case is open to as grave criticism and question as the former. It is that of a man who believes himself to be the President of the United States, and robs a stage-coach. Here are two—on first sight as isolated facts as well can be; a delusion of exaggerated social and political preferment, and a very felonious and vulgar crime! But such a man, Dr. Hammond seems to forget, might, and probably would, reason in this wise: "I am President of the United States; that coach contains United States money, which I am rightfully entitled to as my salary. The law entitles me to take my property where and when I can find it. As Commander-in-Chief of the land and naval forces of the land, I will see if I cannot take my property *vi et armis*." If it could be positively proven that reasoning lunatics reasoned in all respects like sane persons with regard to crime, Dr. Hammond's conclusions would be subjects for our assent, otherwise we cannot look upon them as safe to adopt from any other than a Spartan point of view, and from that point of view it would be as just, if not to slaughter, to castrate all lunatic, epileptic, inebriate,

gonorrhœal, and syphilitic subjects. Still, in whatever respects we may differ from Dr. Hammond on the forensic application of the facts observed in a study of the insane, it would be impossible to close one's eyes to the fact—shame be it to American Psychiatry to have to contemplate such an alternative—that it would be more creditable to the medical profession if insane murderers were to be hung *as lunatics*, than hung after being pronounced sane by men known as "physicians," in obedience to popular clamor and prejudice, the demands of unscrupulous attorneys, and in defiance of scientific truth.

An interesting case of insanity leading to a criminal act, is the one recently reported from Philadelphia.[1] That the no doubt interesting psychological features of the patient are imperfectly related will not strike any one with surprise. It appears that the patient, who had one sister insane and one brother epileptic, and who had been known as a boisterous, eccentric person all his life, though a successful business man, had suffered from some intestinal affection for years. In 1877, he was operated on by Dr. Hayes Agnew for hemorrhoids. Soon after this a marked change occurred in the patient; he suffered from insomnia, and went about crying over the disease, and complaining of the persons who had injured or were about to ruin him. These were, according to him, his physician, who had burnt his intestines out with vitriol, a gentleman who had given him bad advice as to business affairs, and had thus "caused his disease," and his brother. About this time his wife was advised to send him to an insane asylum, but did not. In the autumn of 1879, he attempted to commit suicide, tried to ignite his house, shouted incessantly, and became filthy. He came to the doctor's office, denouncing him and left swearing vengeance. On Christmas day, he went to the house of an old acquaintance, but not finding him in, left word with his wife that he (the patient) would like to show him some machinery. The gentleman called on subsequently met the lunatic, who, after a brief, friendly talk, suddenly exclaimed, "smell that," and threw sulphuric acid into the other's face. He then ran away, but was captured after a struggle, and sent to an asylum. There was a great outcry in the press, a violent declamation against the "insanity dodge," and the man was placed on trial. The experts for the prosecution pronounced him suffering from "general mania," agreeing wonderfully, and the exceptionally enlightened district-attorney called for the prisoner's acquittal on the ground of insanity, he being convinced that it existed, and fearing that a disagreement of the

[1] Philadelphia Medical Times, Nov. 5th, 1881.

jury would practically free him. The judge charged the jury in accordance with this suggestion, but the "twelve good men and true" yielded with difficulty, and after giving their verdict, it was found that evidence strong enough to cause a prosecution to withdraw its case, failed to convince more than three out of the twelve jurors that there was even a "reasonable doubt" of the prisoner's sanity. A stronger comment on the absurdity of trying questions of insanity by juries is scarcely needed. The judge and the prosecuting officer were convinced of the prisoner's insanity, the experts miraculously did not disagree, and yet nine ont of the twelve "Anglo-Saxon" paladins failed to entertain even a doubt as to the prisoner's sanity. A "change of character" is spoken of in the article, but as the character was boisterous and eccentric throughout life, and boisterous and eccentric after the alleged outbreak of insanity, it is difficult to see where the change comes in. Perhaps the *Medical Times* means to say that the insomnia indicated a change of character! We shall not be surprised; in view of the strong emphasis which was given by the "experts" for the prosecution in the Guiteau case to change of character as an essential feature of insanity, which, if not demonstrated, indicated, according to them, the fallacy of the insanity plea, that the organs of the "experts" for the prosecution will not fail to construe a "change of character" out of the most airy nothings in the future to sustain the precarious position of their patrons. To our mind there is no doubt that the patient was a sufferer from systemized delusional insanity, the monomania of older authors, and that on a strong hypochondriacal basis, certain of his delusions were determined by visceral illusions. The modesty of Dr. D. Hayes Agnew, the physician who had treated the patient for the hemorrhoidal affection, in stating that he was not an expert on insanity, stands in such refreshing contrast with that of the first expert who took the stand on behalf of the prosecution in the Guiteau trial, who boldly stated that there was no such term as moral insanity in science, and represented himself as an expert on insanity as he had not hesitated some years before to set himself up as an expert on toxicology,[1] that the fact deserves special mention here. The Philadelphia *Medical Times* takes occasion in connection with the established reluctance of the relatives to send the vitriol-thrower to an asylum, to coin some capital against the asylum-reform movement, by claiming that the latter has frightened the public into the belief that asylums are not proper places for their friends. This is notoriously absurd; even if asylums were beau-

[1] Elwell's Medical Jurisprudence, p. 521.

ideal institutions, and so much red tape were not involved in sending patients to them, still the relatives of patients would feel reluctant to send them there for known and natural reasons. Nothing less than some legal provision making it incumbent on relatives to sequestrate as clearly dangerous lunatics as this man was one or to assume at least the civil responsibility for any damage they might do, will teach the public a salutory lesson which diatribes will not accomplish. It would be as just to attribute the excesses of the Jacobins and the counter-revolutionists to the attempts of Neckar to correct the excesses of the aristocratic farmer-generals, as to attribute the outcome of natural though mistaken feeling to the well-timed efforts made to reform at least the scientific management of our asylums, for which there was and is so much room in the Blockley Almshouse in, and certain other institutions near Philadelphia. The *Medical Times* should know that from one of these the paretic Gosling was discharged *cured* three months before renewed extravagances led to his recommittal by the city-physician of New York. A jury trial, with the usual result, took place in this instance, rivalling the Philadelphia trial in many respects.

The idea, that a change of character is essential to establish the diagnosis of insanity, is evidently a stumbling block in the pathway of many of our alienists, besides those assuming that position on the occasion of the Guiteau trial. One of these medical witnesses has recently and ably discussed the question of Guiteau's responsibility,[1] fettered solely by the above erroneous conception, which stands out in some relief from the generally broad and advanced views of the same writer. He says that, if Guiteau is a partial imbecile, this theory is entirely consistent with the coexistence of quick perceptive faculties, retentive memory, extraordinary acuteness, and inordinate egotism. Such a statement hardly prepares one for the recognition of the pertinency of the next proposal which is "to ascertain, if that be possible, whether in the first place there is that progressive loss of mental power from year to year which is characteristic of disease of the mind, and of which there is some but not conclusive evidence, and in the second place whether there have been from time to time attacks similar to a mild form of mania, which not seldom occur in complete or partial idiots and imbeciles." The latter inquiry is a very pertinent one, the former is not based on assumptions with which we can agree. Its proposal surprises us, coming from one who recog-

[1] American Law Review, February, 1882.

nizes, as the writer does, that there are types of insanity dependent on teratological defect and that a rapid and marked change is not to be expected as long as the pathological factor is a constant and unchanging one. From his description of partial imbecility it is obvious that he understands under this term the "originäre Verrücktheit" of the Germans, the monomania of Spitzka, and the imbecility of the first grade of the earlier American authors. If we are correct in this interpretation, his first test is of doubtful, the second one of but a relative value, for outbreaks of violence are usually episodial and not essential phenomena of this form of insanity. It may be here stated that the ax-episode in Guiteau's career, is one which may well answer this requirement. Attention is called to the interesting fact made manifest in the course of the Guiteau trial that the insane are less inclined than the sane to hold their comrades in misfortune irresponsible. An insane man named Paul, and whose case was referred to in the course of the re-direct examination, made the remark to a reporter that even if Guiteau was insane he was sane enough to know better. The writer seems to consider the question whether Guiteau may not be in the initial stage of paretic dementia an open one. To us all the physical evidences which alone seem calculated to support such an idea appear capable of a different interpretation. The same writer also seems to believe that Guiteau's sexual excesses and his religious pretensions are inconsistent. He forgets that in the Oneida community to which Guiteau for a time belonged, certain sexual and sacerdotal notions were welded together, he forgets also that in the insane generally, sexual and religious deliria are frequently commingled. The crazy Knipperdolling of the Munster Anabaptist movement, and John of Leyden his colleague, numerous other cases in ancient and modern history, and daily observations even among certain epileptic lunatics illustrate this assertion. The suggestion, that the killing of President Garfield belongs to the same category of criminal insane acts as the slaying by lunatics of superintendents and nurses against whom they entertain inimical feelings, is an interesting one. As your contributor understands that this special question will be discussed from a different point of view in the JOURNAL, it is simply mentioned here. The main conclusion of the paper is that "whether Guiteau's delusion was wholly an insane one or not, it must be conceded that his processes of reasoning are very like those of the insane, and totally different from those of the sane." As to the question of responsibility, he considers that it is less easy of determination. Without insanity he holds that Guiteau would not

have committed the crime, but even with insanity, an additional and criminal motive was necessary to provoke it. Altogether the article is exceedingly impartial, broad, and bears evidence on every page of close observation and some of that familiarity with the teachings of classical writers rarely found in our psychiatrical literature.

Liberal and scientific as is this article from a medical writer, we are surprised at as liberal and profound a conception of the problems of insanity, furnished by a member of the legal fraternity, Judge Sedgewick of the Superior Court of New York, in the same number of the Journal. He holds, like Dr. Parsons[1] and unlike many judges and a few English alienists, that the burden of proof in questions involving testamentary capacity rests on the proponents of a will. He says that the general legal practice of presuming the sanity of a testator and at the same time giving the proponent both the opening and closing of the case, involves an absurdity of terms. In regard to the legal bearing of the question of insanity in criminal cases, he says: "In such cases as these, it would seem as if the presumption of innocence, if it is to be of real weight in the case, must attach to whatever facts are involved in the idea of innocence." But suppose the prisoner or his counsel admits all the facts and merely pleads insanity. If the presumption of innocence attached also to the fact of insanity, the singular conclusion[2] would result, that the prisoner must be presumed insane to give full weight to innocence. In this case, as was insisted by Mr. Scoville in the Guiteau case, the prosecution would have to prove the prisoner sane. On the other hand, if the presumption still is that he is sane, what becomes of the presumption that he is innocent, there being no foundation alleged for his innocence except his insanity? Both presumptions can hardly exist together, and since there is no doubt that there is a presumption of sanity, the conclusion seems inevitable that the so-called presumption of innocence is really a compound of a rule that the plaintiff has the burden of proof and the rule as to reasonable doubts. From this reasoning of Judge Sedgewick it appears that where the question is a new issue the jury ought to be thoroughly certain that the prosecution has made out its case. Perhaps, to all practical intents and purposes, the question would be left precisely where it was before. Dr. Hughes, who originally

[1] Journal of Nervous and Mental Diseases, Oct., 1876. Proceedings of the N. Y. Medico-Legal Society.

[2] In fact adopted in a decision of the General Term of the Supreme Court of the District of Columbia.

occupied a rather non-committal position with regard to Guiteau's mental condition, but did not hesitate to come out boldly in defense of "moral insanity," in face of the remarkable dicta of the prosecuting experts," has, since the evidence has become accessible to him, taken even stronger ground with regard to the medico-legal farce. His opening remarks are strikingly like those of an anonymous writer[1] in the *Medical Record*. "The[2] life of Guiteau is of little value compared to the psychology and jurisprudence this trial will illustrate to after-time. Whether the desire to convict in a case where sanity seems more doubtful than irresponsibility shall lead to judicial instruction and expert testimony at variance with the actual facts of psychological science, to become a sort of precedent for future trials whenever the question of insanity connected with capital crime shall be raised, is the all important question to psychiatry. Whether in order to establish the prisoner's insanity experts shall assert the existence of a form of insanity so plain that only the incapable or dishonest experts would deny it, or whether they shall deny the existence of forms of mental aberration, not the most common, yet plainly demonstrable is likewise important to the fair fame of psychiatry."

The Lunacy Laws of the State of Illinois must be in a very unsatisfactory state, judging by the following editorial comment from a prominent western medical biweekly:[3]—"There can be no greater injustice committed toward any one than to expose family afflictions to public criticism. This is being constantly done by the lunacy trials in this State. The daily papers frequently state that attendance on the courts on "insane day" is becoming a fashionable pastime, since much amusement is then and there to be had. Those who attend these trials do not dream of the useless cruelty they are inflicting on the friends of those who are tried like criminals for being afflicted with a disease. Very frequently the question of the support of the patient comes up, and people in moderate circumstances must feel deeply the stigma of being heralded forth to the world as the relatives of a pauper. As an argument for the existing law it may be urged that the liberty of the citizen needs some such protection. The lunacy law of Illinois can easily be shown by statistics, to give no more protection than the laws of various other States which do not require proceedings of such publicity. The average juryman is incapable of deciding the abstruse

[1] N. Y. Medical Record, Oct. 11th. The writer divulged authorship on the stand as a witness in the Guiteau case.

[2] Alienist and Neurologist, Jan., 1882.

[3] Chicago Med. Review, Dec. 15th, 1881.

questions of insanity, and the supposed aid given him by medical evidence it accepted only so far as it chimes in with his preconceived ideas on the subject. There are but few physicians in the State who cannot cite cases of hysterical monomania, of monomania simplex, or of epileptic insanity, which have been pronounced time after time sane by these sapient juries, although to their relatives, friends, and residents in their vicinity the subjects were both troublesome and dangerous. Such a lunatic as the one who assassinated the late President would never have been found insane by juries whose only criterion of insanity is the being at all times violent or silly. At the same time, a jury of the kind usually called on to decide insanity cases is much more easily bribed than the most venal members of the medical profession. The lunacy law of Illinois should therefore be amended in such a manner as to provide more privacy and greater security for life and property. As it stands now, it is easier to commit a dangerous monomaniac to a prison than to send him to an asylum. The best safeguard for public liberty in respect to insanity is not to throw difficulties in the way of the committal of the insane, but to require rigid supervision and inspection of institutions where the patients are kept after being adjudged insane."

To illustrate the truth of the almost incredible statement that the tragic spectacle of lunacy commitment has become a pastime in Chicago, your reporter subjoins an item from a daily paper, the *Chicago Daily News*, of March 23d. Its caption, "Six Lunatics; Their Antics Before Judge Loomis in the County Court," is itself sadly suggestive.

"This morning, Catherine Ann Honey, a young girl who has lived with her parents at 19 Erie street, was found to be insane in Judge Loomis' court. She has been troubled with deep melancholy for about a year, and lately she has been very violent at times. Religion seems to worry her continually, and she frequently expresses a desire to save peoples' souls. She said she had often seen the devil in her room. The other day she saw the Blessed Virgin come to her in the light of a candle. Anna Gilek, of 193 Sedgwick street, a beautiful girl, seventeen years old, has been suffering from acute mania for about two weeks. She was very much excited while in the court-room, and talked constantly. Her words were wholly incoherent. 'The black coffin where my father lay dead, and the mercy that is never for us,' she said; 'but I will show you how it was we danced,' taking steps to imaginary music as she was led away. She appeared in words and actions to be a demented Ophelia in sad reality. During the

examination of the witnesses, she carefully mimicked the questions put to them and the answers they made. Mary Franklin, of 217 North Wells street, a pretty black-eyed girl of nineteen years of age, has been insane about four weeks from family troubles, in which a lover appears to have been concerned. She was very polite and pleasant, and told the jury many things about herself that were partly true and partly taken from novels she had read. At times she imagines she is a queen. Last night she jumped from a second-story window to the ground. Her mind was full of ideas taken from novels, and all her talk was of the same character as this: 'I told them I would lie down and die; but I said there would be a resurrection, and I laughed. I called myself Lady Demar, and said I had a secret like Lady Demar did in the novel.' Mrs. Dora Otto, of 137 Cornell street, forty-five years of age, has for years labored under the idea that some one is haunting her. She has only recently become insane from a change of life. She showed herself to be rather quarrelsome, and contradicted the witnesses on many trivial points in their testimony. Jacob Michael, an uncouth and friendless German of middle age, who was picked up on the streets, had no one to tell his history, and could not tell it himself. Throughout the investigation, he growled and gibbered in unintelligible German. His insanity is probably hereditary. Peter Peterson, a Norwegian painter, from the town of Jefferson, proved to be a very funny lunatic. He came forward to his examination in a lordly manner, and tapped Michael, the other lunatic, on the head to make him stand aside. Michael turned upon his assailant in a rage, and a battle of the cranks appeared imminent, but they were quickly led apart. Peterson's insanity had only been of short duration, and seemed to be caused by hearing bad news from his family in Norway. During his examination, he rose from his chair several times, and commanded silence. All the while he was gravely performing all sorts of antics, from stuffing his shoe full of paper to crawling under the benches. All six of the above persons were ordered sent to Jefferson, the last two being recorded as paupers."

The same periodical contains other interesting comments on forensic topics; speaking of the relation of absurd religious belief and insanity, its editors state that a Connecticut jury set aside a will which had been made by a spiritualist. The ground of this verdict was that a person who is a spiritualist is necessarily insane. The parties interested in the will appealed the case, one of the chief grounds of appeal being that the jury was composed chiefly of congregational deacons who were prejudiced

against spiritualism. The fact ought to be well realized that no religious belief, however absurd, can constitute insanity, unless that belief be followed by acts incongruous with the surroundings of the patient.

It appears that the "Peculiar People" of England, who reject medical attendance, and rely solely on prayer, and in consequence are so frequently before the magistrates, are not without imitators in the United States. According to a daily journal, the wife of a well-to-do farmer of Chatauqua County, New York, was attacked by fever. Her husband would not have a physician. He said that the disease was sent upon his wife as a judgment for his sins, and she could only recover through his doing penance and praying for forgiveness. His father and three neighbors agreed with him. The five men surrounded the sick woman's bed, and for three days remained in constant prayer for her recovery. None of them took nourishment during this time, nor gave any attention to the wants of the sick woman, who was delirious. At the end of three days, other neighbors forced their way into the house, and the husband was arrested and placed under bonds to give his wife proper care. She died soon afterward. The husband is to be held responsible for his wife's death. If the husband had called this system of treatment, as many such enthusiasts have done, "theopathy," and claimed it as a special medical system, could he have been interfered with? Or, supposing that he now claims these performances were part of his religious belief, can he be punished? It will readily be seen that the question of this man's punishability for the death of his wife will not easily be settled, even if his sanity is not called into question. If the question of insanity be raised, it will require much more than this single act to demonstrate its existence, for this differs in no way from the actions of the "Peculiar People" of England already alluded to, and is the natural logical outcome of beliefs held by many religious people, of questionable strength of judgment, perhaps, but of indisputable sanity.

A striking illustration of the statement made in the *Chicago Review* that juries are apt to accept only such medical evidence as happens to coincide with their preconceived notions, is furnished by a murder trial in New Jersey. A doctor (*sic*) testified on behalf of the prosecution that he did not believe in that sort of insanity which began just before and ended after a crime. The case was one of unquestionably profound affective perversion, and therefore intangible to a jury, consequently this ingenious statement, one periodically cropping out in the daily papers, was greeted

with tumultuous applause by the court-room audience, and gravely commended by the press.

A recent decision of the Supreme Court of Iowa[1] commends itself to the attention of jurists and alienists, from its lack of that ambiguity ordinarily characterizing the rulings of judges on questions involving insanity. It holds that persons of unsound mind are to be held bound by an executed contract or conveyance, where the transaction is fair and reasonable and in the ordinary course of business, and where the mental condition of the party is unknown to the other part, while the parties cannot be placed in *statu quo*. This decision rests in part on a precedent.

Freeman, the insane Pocasset murderer, has recently had an imitator in Providence, Rhode Island. A resident of that city, under a delusion consequent upon a hallucination that God had commanded him so to do, built a pyre of wood in his house, saturated it with oil, bound his infant son, and placed the child upon the pyre, while he himself knelt down to offer up a prayer for blessing on the intended sacrifice. Just about applying a match to the pile, he was discovered, and arrested before he could strike the match. There were, no doubt, many premonitory symptoms; but the public finding the man to be capable for business, paid little attention to his mental peculiarities.

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[1] North-Western Reporter, June 18th, 1881.

NOTE ON THE ECTAL (SUPERFICIAL) ORIGIN OF THE N. TRIGEMINUS IN THE DOMESTIC CAT.

BY

BURT G. WILDER, M. D.

In my paper on the Brain of the Cat (Proc. Am. Phil. Soc., July 15, 1881), it is stated upon p. 548 that "the *nervus trigeminus*, in place of emerging through the pons, as in man, arises wholly caudad of it, although closely applied to its surface."

In a notice of that paper in the initial number of this Journal, the reviewer says (p. 103): "A series of sections from a lion's brain and another from the cat incline us to the belief that this statement cannot be sustained, and a glance at the Professor's figure [3] confirms our impression."

With reference to this point I have lately examined thirteen brains taken at random from the alcoholic preparations of the cat's brain in the Museum of Cornell University. In six of them the trigeminus cleared the caudal ("lower") margin of the pons, while in the other seven its fasciculi were more or less involved in those of the pons.

The reviewer does not state the precise condition of the parts in his preparations, but presumably it was as in the seven above mentioned rather than as in the human brain.

Pending the more extended consideration of the matter which should be made, the following may be

accepted as a sufficiently guarded statement of the case:

1. In man the trigeminus emerges from the pons nearer its cephalic than its caudal border.

2. In the cat the nerve is always nearer the caudal than the cephalic border.

3. Sometimes the entire nerve passes just caudad of the pons, which is then usually somewhat emarginate at that point.

4. Sometimes, perhaps more often, some of the fibers of the nerve interdigitate with those which form the caudal margin of the pons.

The original statement had, as it appears, an insufficient basis as a generalization, although true in the particular brain described. Moreover, it was intended less as a description of the precise mode of origin of the nerve than as an indication of the less caudal extension of the pons in the cat as compared with that in man.

It is proper to add that the paper above mentioned claimed to be only a preliminary account of the gross anatomy, and contained the admission that "no part of the cat's brain is thoroughly understood, and all parts need monographic treatment." The present instance illustrates the desirability of carefully examining large numbers of preparations with reference to each point.

THE DISEASE OF THE SCYTHIANS (MORBUS FEMINARUM) AND CERTAIN ANALOGOUS CONDITIONS.

BY

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(Read before the American Neurological Association, June 23d, 1882.)

From a very early period the idea has existed that the male inhabitants of the Caucasus are subject to a peculiar disease, the chief characteristics of which are the loss of the physiological and moral attributes of man, the supervention of impotence, the disappearance of the beard, the atrophy of the penis and testicles, and eventually the implication of the mind to such an extent that the subjects, believing themselves to be women, clothe themselves like women and adopt the manners, customs, and occupations of the female sex.

The first mention of the condition in question is that by Herodotus[1], who states that when the Scythians were about leaving Syria and Palestine, which they had invaded, their rear guard pillaged the temple of Venus at Ascalon. The goddess was so enraged at the act of desecration that she caused the perpetrators to become like women, and further decreed that their posterity should be similarly affected. Herodotus accepts this story without question.

[1] History of Herodotus (Rawlinson's Translation), vol. i, p. 190.

Hippocrates[1] is the next to refer to the matter, and as showing to what causes the "Father of Medicine" attributed the remarkable disease I quote his observations at length: "I have to make another allusion," he says, "and that is to the fact that among the Scythians many impotent persons are encountered, who occupy themselves with the work of women and who have a like pitch or tone of voice. They are called *anandrii*. The natives allege that the phenomena are caused by a god, and they venerate and worship those who are thus affected, fearing each one that he may himself become the subject of a like visitation. As for me, I regard this disease as being no more of divine origin than any other, for no disease has any pre-eminence in this respect. Each one has a natural cause, and no one can arise without the intervention of nature. Let me state what appears to me to be the cause of the affection.

"Horseback riding produces with the Scythians engorgements of the articulations, because the limbs are always hanging without support. With those who are severely visited the hip is drawn back and they are rendered lame. For the cure of this deformity they open the two veins which are near the ears. When the blood has ceased to flow they are overcome with weakness and fall asleep. On awaking some are found to be cured, but others are not. I presume that it is exactly by this treatment that the seminal fluid is changed, for near the ears there are veins which render impotent those in whom they are cut. Now, I think that they divide these very veins. When after this operation they attempt to have sexual intercourse and fail, they are at first not disquieted, but if after two or three more trials they do not succeed, they imagine that they are being punished by some god whom they have offended. They then assume the attire of women, declare that they have lost their

[1] *Περὶ ἀέρων, ὑδάτων, τόπων,*

virility, associate exclusively with women, and follow like occupations.

"This disease attacks the rich and not the lower classes. The noble and the powerful are its chief victims, because they go much on horseback, while the poor do not. * * It is also met with in other people, for when equitation is the chief and habitual mode of exercise many must suffer from swellings of the joints, with sciatica and gout and be deprived of sexual intercourse. These infirmities are widespread among the Scythians, who are the most impotent of men, in consequence of the cause specified and by reason of the fact that they constantly wear breeches and pass the greater part of the time on horseback. Thus they never touch the genital organs with the hands; and subdued by cold and restrained by the fatigue attendant on sexual pleasures, they do not attempt intercourse till they have in reality lost their virile power."

It will be seen, therefore, that Hippocrates attributes the disease under notice indirectly to horseback riding in excess, and directly to the division of veins near the ears, which he supposes to be in intimate relation with the generative organs.

Sprengel[1] speaks of the pretended wise men among the Scythians who, rendered irritable by the abstinence to which they condemned themselves, fell into violent convulsions whenever they wished, or whenever the superstition of their countrymen required. The unintelligible words which they spoke while in this state caused them to be regarded as prophets. The Greeks called them *enarees*, *anandries*, either because their prejudices obliged them to avoid intercourse with women, or because their excessive sensibility really changed their constitutions, and rendered them unfit

[1] Historie de la Médecine (French Translation of A. J. L. Jourdan). Paris, 1815, t. 1, p. 207.

for the generative act. He quotes Reinegg,[1] who in his description of the Caucasus says:

"The most remarkable of all the nomadic tribes of the Kuban is that called the Nogays or Mongutays. The members of this are distinguished from the others by the Mongolian features, which characterize their entire physical structure. The men are obese, large and swollen, the cheek-bones very prominent, the eyes deep-sunken, and the beard sparse. When they are reduced by disease, or when they have attained to an advanced age, the skin of the whole body becomes wrinkled, the beard disappears altogether, and in this state they present a great resemblance to women. They become incapable of the procreative act, and their feelings as well as their actions cease to be like those of the sex to which they belong. Obliged to fly from the society of men, they seek that of women, whose dress they adopt."

Jules Klaproth,[2] the son of the eminent chemist, has noticed the like facts in the Nogays of the Caucasus, and recognizes the accuracy of the description given by Hippocrates, and which I have already cited.

Chotomski[3] is authority for the statement that there are to this day many among the Tartars of the Caucasus who are affected with impotence as a consequence of excessive riding on horseback.

It therefore appears that there is good reason for believing that the male Scythians of an early day and their descendants, the inhabitants of the Caucasus of the present time, are particularly subject to sexual impotence, and that this condition is accompanied with such moral and physical changes in the affected individuals as to cause them to look

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[1] Beschreibung der Kaukasus, St. Petersburg, 1796, Th. 1, p. 269.

[2] Reise in der Caucasus, und nach Georgien, Berlin, 1812, Th. 1, p. 285.

[3] Cited by Daremberg, in his translation of Hippocrates, Paris, 1843, p. 497.

like women, and to acquire the mental characteristics and instincts of the female sex.

My attention was first drawn to this subject over thirty years ago, when I was on duty in New Mexico, as a medical officer of the Army. I was at that time stationed at Laguna, an Indian village, built and inhabited by Pueblo Indians, who are the descendants of the Aztecs, and who even yet, notwithstanding their conversion to the Catholic religion, worship the Sun surreptitiously, preserve the sacred fire, and look forward with confidence to the reappearance among them of their former emperor Montezuma, who they believe will again become their sovereign.

I had not resided there long when I was informed by certain of the New Mexican inhabitants, with many injunctions of caution and secrecy, that there was in the pueblo an individual in regard to whom the Indians observed a great deal of reserve and mystery. It was asserted that by some means or other the sex of this person had become changed from male to female, that he had assumed the garb of a woman, lived with women, and followed their occupations. He was called a *mujerado*. Literally the meaning is "womaned," but in reality there is no such word in Spanish, and it is probably a corruption of *mujeriego*, which signifies "feminine" or "womanish."

It fortunately happened that the old chief of the pueblo had been a patient of mine for a rheumatic affection, of which he had been relieved by the strong liniment I gave him, so that on my delicately hinting that I would like to see the *mujerado*, the permission to do so was, after a little hesitation, freely granted, the chief offering to act as my introducer. We therefore at once proceeded to the place where the public corn was being ground by the women detailed that day for the purpose. On entering the room, which was somewhat excluded from profane observation, we

found about a dozen women on their knees before the *metates*, laboriously doing what a mill would have accomplished in a hundredth part of the time. The chief spoke a few words, when immediately one, whom I would not have been able to distinguish on a cursory inspection from any of the others, rose and came towards us. "*Aqui esta el mujerado*"—"Here is the *mujerado*," said the old chief- "You can do what you please with him." I observed that he used the masculine pronoun *el* in referring to the individual.

He was about thirty-five years old, rather tall and slim. There was not a vestige of beard, though I attached little importance to this fact, as the Indians rarely have any marked growth of the kind. His countenance was cheerful and his face was free from wrinkles, full and rounded, like that of most Indian women of his age. He was dressed exactly like the others. On my expression of a desire to examine him more closely, he was directed to accompany me into an adjoining room, which he at once did, the chief going with us. He then at my request removed all his clothing. The first thing that attracted my notice was the extraordinary development of the mammary glands, which were as large as those of a child-bearing woman. He told me that he had nursed several infants whose mothers had died, and that he had given them plenty of milk from his breasts. I expressed my doubts of the truth of this assertion, but he persisted with vehemence that it was true. The chief would neither affirm nor deny its correctness, repeating, in answer to my inquiries, after the true Mexican fashion, "*Quisas, quien sabe!*"—("Perhaps so, I do not know.")

The abdomen was protuberant and the limbs were round, full and soft.

Of course the most important parts to be inspected were

the genital organs. There was no hair on the pubis; the penis was shrunken, but was otherwise normal; the prepuce could be readily retracted and the glans presented a healthy appearance, except that it was not larger than a thimble, which it very much resembled in shape. The whole organ was, in its flaccid condition, about an inch and a half in length. The scrotum was long and pendulous and contained the remains of the testicles, which had almost entirely disappeared. Each one was the size of a small filbert, as well as I could judge. Pressure upon them gave slight pain. I supposed that the glandular structure had become almost entirely atrophied, little besides connective tissue remaining. The spermatic cords could be distinctly felt up to the external abdominal rings. There was slight varicocele.

In all other respects the organs were normal, there being no deformity of any kind. I was surprised at this condition, for I had expected to see some form of hermaphrodism, or at least cryptorchism.

He informed me that he had been a *mujerado* for seven years, and that previous to that time he had possessed in full all the sexual attributes of a man. First, his testicles had begun to get smaller, and with their disappearance he had lost all sexual desire, all liking for the companionship of men and for their ways, and had sought the society of the women. His penis had not at first diminished in size, but as it gradually lost the power of erection it had also become atrophied. Before he became a *mujerado* he had, as he informed me with evident pride, possessed a large penis and his testicles were "*grandes como huevos*"—as large as eggs—a statement which the old chief unhesitatingly confirmed.

His voice was of high pitch, thin and cracked, especially when he became excited, which he did very readily; and he

indulged in more gesticulations than any Indian I had ever seen.

In the pueblo of Acoma, about twenty miles from Laguna, I ascertained that there was another *mujerado*. Accompanied by the old Laguna chief I paid a visit to this village in the autumn of 1851, and had the opportunity of making a thorough examination of the individual who served in that capacity.

There was no remarkable development of the mammary glands; the pubis was devoid of hair; the penis was greatly shrunken, not being over an inch in length when flaccid, and of about the circumference of the little finger. The testicles apparently consisted of nothing but connective tissue, as no pain was experienced on strong pressure being applied to the soft flat masses, about the size of a kidney bean, which lay at the bottom of the scrotum. There was no genital deformity of any kind whatever.

The limbs and the whole body were full and rounded, and there was not a sign of hair anywhere, except on the scalp. The voice was shrill and weak. As he stood naked before me, the whole appearance was more that of a woman than of a man. When he put on his woman's dress, it was impossible to discover any mark of difference between him and the women among whom he lived. He was apparently about thirty-six or seven years old, and had been a *mujerado* for nearly ten years.

These were the only *mujerados* I saw in New Mexico, though I was told that every pueblo had one, or even more. Their *raison d'etre* is evidently to be found in the force of tradition, which still exists to a great extent with the Pueblo Indians of New Mexico. In referring further to that subject, I am actuated by a desire to shed as much light as possible upon a custom and its results, not only important from an anthropological, but a neurological point of view,

and which will doubtless disappear ere long before advancing civilization, even if they have not already done so.

I found it very difficult to ascertain the cause of the atrophy of the genital organs, and of the great changes which had been produced in other parts of the organism, but I finally succeeded in obtaining some information, which was certainly correct as far as it went, for it was derived from several authentic sources, including the subjects themselves, and was uniformly to the same effect.

A *mujerado* is an essential person in the saturnalia or orgies, in which these Indians, like the ancient Greeks, Egyptians and other nations indulge. He is the chief passive agent in the pederastic ceremonies, which form so important a part in the performances. These take place in the Spring of every year, and are conducted with the utmost secrecy, as regards the non-Indian part of the population. For the making of a *mujerado*, one of the most virile men is selected, and the act of masturbation is performed upon him many times every day. At the same time he is made to ride almost continuously on horseback. The genital organs are thus brought at first into a state of extreme erethism, so that the motion of the horse is sufficient to produce a discharge of seminal fluid, while at the same time the pressure of the body on the animal's back—for the riding is done without a saddle—interferes with their proper nutrition. It eventually happens that though an orgasm may be caused, emissions can no longer be effected, even upon the most intense degree of excitation. Finally the accomplishment of an orgasm becomes impossible. In the meantime the penis and testicles begin to shrink, and in time reach their lowest plane of degradation. Erections then altogether cease.

But the most decided changes are at the same time going on little by little in the instincts and proclivities of the subject. He loses his taste for those sports and

occupations in which he formerly indulged, his courage disappears, and he becomes timid to such an extent that if he is a man occupying a prominent place in the councils of the pueblo he is at once relieved of all power and responsibility, and his influence is at an end. If he is married, his wife and children pass from under his control, whether, however, through his wish or theirs, or by the orders of the council, I could not ascertain. They certainly became no more to him than other women and children of the pueblo.

At the same time no disgrace attaches to the condition of the *mujerado*. He is protected and supported by the pueblo, is held in some sort of honor, and need not work unless he chooses. Men, however, do not associate with him, but this is more in accordance with his wishes and inclinations than from any desire on their part to avoid him.

Indeed, his endeavor seems to be to assimilate himself as much as possible to the female sex, and to get rid as far as may be of all the attributes, mental and physical, of manhood. Nevertheless, the condition is one which is, I believe, forced upon him by the power of tradition, custom and public opinion, and which—recognizing the impossibility of escape—he assumes probably with reluctance in the first instance, but eventually with entire complaisance and assent.

I could not ascertain, with any degree of certainty, whether the *mujerados* were public property for pederastic purposes at any other times than at the annual orgies, but I am inclined to think that the chiefs or some of them have the right so to employ them, and that they do avail themselves of the privilege. They avoided all reference to the subject, and professed the most complete ignorance of the matter when I questioned them directly thereon. The

old chief, however, who acted as my escort, while not disposed to be communicative, was not altogether reticent on this point, and admitted, by unmistakable signs and with perfect equanimity, that he himself, in his younger days, had made use of the *mujerado* of his pueblo in the manner referred to.

The difference between the *mujerados* and the *enares*, as Herodotus calls them, of the Scythians, consists chiefly in the fact that the deprivation of virility is intentionally produced for a specific purpose in the Pueblo cases, while in the Scythians it is the incidental result of customs and other factors which exist among the people. As a whole, I am quite sure that it is in both instances due to causes of similar character.

There seems to be little doubt that the male Scythians were, and their Tartar descendants of the present day are, extremely addicted to the vice of masturbation, and that they are also subject to seminal losses not directly the results of voluntary acts. And this, notwithstanding the circumstance alleged by Hippocrates that the constant wearing of breeches prevents them carrying their hands to their genital organs. Sprengel[1] declares that, as a consequence of the local excitement due to continual horseback riding, they are not only subject to the emissions resulting from the friction, but that they practice onanism to an inordinate extent. This latter habit is also, doubtless, aggravated by the circumstance that their nomadic life deprives them to a great degree of the ordinary facilities for sexual intercourse, women not accompanying them on their forays and other expeditions.

A similar explanation is given by Lallemand[2], who reports several cases of impotence due to seminal losses as

[1] Apologie der Hippokrates, Leipzig, 1792, Part ii, p. 610.
[2] Des pertes séminales, Paris, 1836, Part i., p. 581.

consequences of excessive equitation. According to him the friction and shocks to the perineum resulting from contact with the saddle cause irritation of the efferent ducts, thence the morbid process passes to the epididymis and the testicles, which are kept in an almost constant state of erethism. Emissions result spontaneously, and the condition in question prompts to the frequent commission of masturbation. Impotence is the ultimate consequence.

Another explanation of the abolition of sexual power from excessive horseback exercise is that of Daremberg[1] who ascribes it to the pressure exerted upon the spermatic vessels and the consequent interruption of the due course of their nutrition, and the loss of all procreative desire and ability. He does not appear to have had his attention drawn to the erethism of the sexual organs produced by excessive horseback exercise.

Under the heads of "Eviration" and "Maladie des Scythes," Nysten[2] speaks of the impotence resulting from inordinate equitation. It produces, he declares, complete loss of sexual desire, and an impossibility of erection in men who are otherwise vigorous and in good health. Foresters and country physicians, who pass a good deal of their time on horseback, are mentioned by him as among its subjects. The habitual compression of the vesiculæ seminales and of the prostate gland appears to him to interfere with the secreting process of the semen.

The Pueblo Indians appear to recognize the influence of horseback riding as an efficient aid in their process for making a *mujerado*. It is certainly true, as I know from my own observations, that the nomadic American Indians, who are the representatives of the Scythians on the Western Continent, especially the Apaches and Navajos, possess small

[1] Hippocrates (Translation), 1 Paris, 1843, Note 58, p. 497.
[2] Dictionnaire de Médecine, etc., onzieme édition, Paris, 1858.

generative organs and limited sexual desire and power. From their very infancy they are accustomed to the use of the horse for going even the shortest distances. They rarely walk unless to the places where their horses are hitched, and they keep them generally within arm's reach; I have seen them mount a horse to ride twenty-five feet to get the saddle; one of the consequences of this practice is the arrest of development in the muscles of the lower extremities, their thighs are attenuated and their calves are as flat as the hand. They are entirely incapable of long foot marches.

While I have no statistics or very definite information on the subject, I am quite sure that impotence is common among them. I have often, when they had ascertained that I was a "medicine man," had young and apparently otherwise vigorous and healthy men beg me to give them some "strong medicine" to restore their virile power, and I am aware that the major part of the "pow-wowings" of their own "medicine men" is undertaken for the same purpose. An Apache or Navajo woman with more than two or three children would be a curiosity among them.

I have already spoken of the probable object had in mind in the creation of the *mujerados*. It is not at all improbable that the subjects of the "Disease of the Scythians" have from the earliest period been used for a like purpose. Bouhier [1] asserts that they are the passive agents in pederasty, and that therefore they correspond to the *pathici* of the ancients, and, I may add, to the *mujerados* of the Pueblo Indians. A like view is held by Rosenbaum[2], who regards the disease as also being produced by the practice in question which is at the same time therefore cause and effect. Interesting and important data relative to the mental and physical changes in the organism which result from this vice, are

[1] Recherches et dissertations sur Hérodote, Dijon, 1746, p. 249.

[2] Geschichte der Lustseuche, Halle, 1837, t. 1, p. 141.

given by Tardieu[1], Legrand du Saulle[2], Moreau[3] (de Tours), Godard[4], and other writers on sexual aberrations.

Friedreich[5] regards the Disease of the Scythians as being delusional insanity, but I think a very little consideration of all the phenomena of the affection, and those present in the *mujerados* of the Pueblo Indians, will suffice to show that the subjects were actuated rather by morbid impulse than by delusion. It differs altogether from those cases of mental derangement, in which works on insanity abound, and instances of which many of those present have witnessed, in which men and women have believed themselves to have undergone a veritable change of sex. In these latter examples there is no physical alteration on which the delusion is based. They are as much men or as much women as they ever were, but entertaining the erroneous belief that a transformation of sex has occurred, they dress and act accordingly.

There is no evidence to show that the Scythians suffering from the disease under notice really believed themselves to have become women. What they labored under was the idea that being men they were obliged to dress, to live and to feel like women, that possessing the sexual organs of the male sex they were cut off from the privilege of using them, and forced to assimilate themselves to a sex which they believed to be of inferior social rank. This was the punishment which, as their ancestors believed, was inflicted on them by Venus, and which their descendants now conceive they are still forced to undergo from God, whom they have in some way or other offended.

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[1] Étude médico-legale sur les attentats aux mœurs, 7th édition, Paris, 1878.

[2] Traité de médecine legale, Paris, 1874.

[3] Des aberrations du sens génésique, 2d édition, Paris 1880.

[4] Égypte et Palestine, Paris, 1867.

[5] Historisches Fragment—Magazine für die philosophische Medizin und gerichtliche Seelenkunde. Würzburg, 1829, t. 1, p. 75.

Dr. Montyel,[1] while contending for the facts that its starting point is impotence, caused by excessive equitation, and that it ends in seminal mania (*folie seminale*), nevertheless asserts that the mental alienation is delusional in character. He thinks that the insanity takes this form in consequence of the continued existence of the tradition that a penalty was incurred by their ancestors, and that hence the production of this particular type of seminal insanity. Just as with people who believe in the existence of witches and devils, insanity may be characterized by delusions of possession or other forms of satanic influence. The cases which he cites from Esquirol are undoubtedly those of lunatics, but of lunatics who, like others entertaining delusions, act in strict accord with the character of their false beliefs.

Dr. Spitzka[2] has adduced the case of Lord Cornbury, Governor of New York during the reign of Queen Anne. This person was "a degraded, hypocritical and utterly immoral being, devoid of anything remotely resembling a conscience, and so thoroughly mean and contemptible that it required but a short period of his rule to array all classes of the population against him. * * * He was devoid of caution, a spendthrift, and altogether erratic in his behavior. Obtaining his position through nepotism, the Queen was compelled to remove him, although he was her own cousin and the son of Lord Clarendon. On losing his position his creditors in New York locked him up in a debtor's prison, where he languished until his father died. Then money was sent over to liberate him and to enable him to represent the English people in the House of Lords!"

[1] "De la maladie des Scythes," Annales Medico-Psychologiques. Mars, 1877, p. 161.

[2] A Historical Case of Sexual Perversion, Chicago Medical Review, August 20, 1881.

"Unfortunately," continues Dr. Spitzka, "only the most notable feature of his insanity has been preserved in the records. But that single feature demonstrates the character of his mental disease. His greatest pleasure was to dress himself as a woman; and New York frequently saw its Governor, the commander of the colonial troops and a scion of the royal stock, promenading the walls of the little fort in female attire, with all the coquetry of a woman and all the gestures of a courtesan. His picture, which is extant, shows him to have had a narrow forehead, an unsymmetrical face, highly arched eyebrows, a very sensual mouth and a very feminine expression. The painting, of which I have seen a copy, represents him in female dress, with his neck and part of his chest bare, and his hair done up in female fashion."

Probably Lord Cornbury was what would now be called a "reasoning maniac." He was a sharp, shrewd and bold man, who constantly consulted his own ends to the exclusion of those of the people, and whose chief object in life seemed to be to get money from the province on one pretense or another and put it into his own pocket. But he never, so far as we know, entertained even for an instant the idea that he was a woman. He had a reason of altogether a different kind for appearing in female attire, and that was that, as his sovereign was a woman, it was proper that he should show his respect for her by dressing as she did.[1] An insane motive, doubtless, but not based on the delusion that he was of like sex to his queen. Lord Cornbury had his favorites as corrupt as himself, and upon whom he lavished all the gifts of money and place in his power. It would be interesting to know whether or not

[1] Bryant's Popular History of the United States. New York, 1879. Vol. iii., p. 41. There is on the same page a copy of the portrait referred to by Dr. Spitzka. The original is in the Kensington Museum, London.

he was addicted to pederasty, and whether or not he eventually became impotent.

The essential point in the "Disease of the Scythians" and in the *mujerados* of the Pueblo Indians is, that the mental alienation through the influence of which they dressed and acted like women had its origin in sexual impotence. Hence the cases described by Servaes[1], by Krafft-Ebing[2], by Liman[3], Legrand du Saulle[4] and many others, as well as the remarkable case reported by Dr. H——[5], are not exactly embraced within the scope of this memoir. Several instances similar to those referred to have come under my own observation, and in a subsequent essay I propose to discuss them at length.

In the meantime I venture to indulge the hope that I have succeeded in considering a subject revolting in some of its details with that decorum so proper in all things, even those of the most refined and elevated character. As Legrand du Saulle says, "Science, like fire, purifies everything it touches," and in the language of Lord Bacon, "Whatever is worthy of existence is worthy of science."

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[1] Zur Kenntniss von der conträren Sexual empfindung—Archiv für Psychiatrie und Nervenkrankheiten, 1876, p. 484.

[2] Ueber gewisse Anomalien des Geschlechtstriebes u. s. w. Archiv für Psychiatrie, 1877, p. 291.

[3] Caspar's Lehrbuch, 6 Auflage, p. 509.

[4] Le signes physiques des folies raisonnantes (Discussion) Annales Médico-Psychologiques, Mai 1876, p. 433, et seq.

[5] Medical Record (New York), March 19, 1881, p. 336.

A CASE OF DESTRUCTIVE LESION OF THE CUNEUS, ACCOMPANIED BY COLOR-BLINDNESS.

BY
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Edward T——y, aged sixty-three, a native of Ireland. I first saw the patient with Dr. C. E. Billington, who had treated him from the beginning of his illness, and who, on this day, October 24, 1881, turned him over to me. The patient was taken ill in the previous month, the advent of the attack being sudden and accompanied by loss of power and sensation. From the account which I first obtained from him and his sister, the commencement of the attack was marked by sudden paralysis and loss of consciousness, the patient falling in the street, which view some bruises on his hand and leg would tend to confirm. On closer inquiry I elicited the fact that he felt ill in the morning on going to work, and that he lost the power of co-ordinating his muscles, since he said "he staggered and reeled about as if he were drunk." He, therefore, ceased work and managed to reach his home, but how he knows not, for his consciousness became lost from the time he left his place of employment. His mind remained a blank for the subsequent couple of days.

When I first saw him he had imperfect right hemiplegia. Facial paralysis on the same side was not very noticeable. The right corner of his mouth was not much lower than the left; the tongue deviated to the left.

The anæsthesia was much more pronounced than the loss of motor power, for the coarse movements of his right upper and lower extremities he could perform quite well; but the loss of sensation was not absolute, as he could distinguish the points of the æsthesiometer at a distance of two and a half inches on the right, and of one-half inch on corresponding points of the left side.

I had not a dynamometer with me to measure the muscular strength of his hands, but there seemed to be no difference in the

force of the grasp which he gave to my hand, seized alternately by each of his hands, denoting, therefore, a slight paresis of his right hand.

The temperature of either side of the body, as taken in the axillae, was the same. He suffered from incontinence of urine, which annoyed him exceedingly. The urine had a specific gravity of 1017, was pale in color, alkaline in reaction, and contained pus and triple phosphates. The presence of the pus was due to a slight cystitis. The urine itself contained no albumen, nor did a microscopical examination reveal any casts or other evidences of renal disease.

His bowels were constipated. His arteries at the wrist were hard, his temporal arteries serpentine.

The tendon-reflex was more marked on the right than on the left side.

These conditions remained thus for some weeks, when symptoms of irritation from the cerebral lesion made their appearance. Hyperæsthesia of the thigh, which was formerly anæsthetic, was now noted. Tremor in the paralyzed side became apparent. Headache, restlessness and insomnia gave not infrequent occasion for more or less complaint. Tinnitus aurium and dazzling before the eyes were at times present. His thoughts became dulled and his mind not at all clear. His sight, which was previous to the attack very good, was interfered with; and "everything," he said, "now appeared dull and hazy." He had diplopia. On the day that I first noticed the above symptoms of cerebral irritation, and remarked the defect in his vision, I accidentally asked him to name the color of a scarf which I wore, which was dark-blue and covered with small yellow spots. This tie he took to be red in color. It was at first difficult to have him answer to the names of the various colors, on account of the presence of a slight amnesic aphasia. This aphasia was most marked in regard to names of colors, not in regard to contours, for he would compare colors to the tints of common objects like harness.

I saw the patient last on February 23, 1882, and on that occasion took my friend, Dr. E. C. Spitzka, with me to give me his opinion in regard to the case. We now examined him more minutely in regard to his color-blindness, using the colors of a spectrum diagram, as well as those of some gaudily colored pictures hanging on the walls of the patient's room, as tests, and discovered that he failed entirely to recognize the green. Before his attack

he could always distinguish this color, and as he had worked for over thirty years on the Harlem River Railroad, he was frequently compelled to put his perception of the colors of red and green to the test, and was never found to be deficient in their recognition. But now he was doubtful as to whether violet was greenish or bluish. He said green was red, or rather pinkish. Red or yellow he was not at any time mistaken about. The loss of color perception involved both eyes. No gross objective diminution of sight could be demonstrated,[1] save a subjective blurring, nor any limitation of the field of vision. No ophthalmoscopic examination was made.

Retraction of the paralyzed muscles had now set in, together with a constant tremor of the hemiplegic extremities. In the thumb of the left hand was noticed an athetoid tremor synchronous with that of the paralyzed arm.

The facial paralysis, now better marked than at first, is accompanied by a constant dribbling of saliva from the paretic corner of his mouth.

He is now also exceedingly emotional, and is slow in answering questions which are asked of him, and to which he replies with much effort.

The above clinical history of the case, save a few unimportant emendations and additions, was published in the Chicago *Medical Review*, April, 1882, at which time I wrote that it seemed to me there could be little doubt that a somewhat extensive lesion had resulted from nutritive disturbances, and involved the fibres corresponding to the posterior half of the middle third, and the posterior third of the internal capsule in their infra-cortical expansion.

From this time the patient gradually declined, and, after the supervention of general oedema, died a few weeks later (May 1, 1882).

Autopsy.—Took place about nine hours after death, there being present Drs. E. C. Spitzka, J. H. Billings and myself.

The body was in good condition; rigor mortis well marked. A

[1] The patient's lack of skill in reading rendered the available tests at my disposal almost useless, so that this point could not be accurately determined.

general subcutaneous oedema was noted. No signs of decomposition.

The brain only was examined. The mesocephalic cranium was of moderate thickness, the diploë being nearly entirely replaced by compact bone. The dura was normal, the veins being full of dark fluid blood. The pacchionian granulations were moderately numerous. Before the brain was removed from the cranium, and while the inner face of the left hemisphere was carefully separated from the great falx, a softened area was discovered at the apex of the cuneus. The tissue gave way here spontaneously. The brain was then removed and no surface anomaly was discovered.

There was no oedema of the arachnoid. The fluid of the ventricles, which were of normal dimensions, was clear and slightly tinged with blood. The white and gray substances were of firm normal consistency and color. There were very few puncta vasculosa, but the cortex showed the usual condition as to injection.

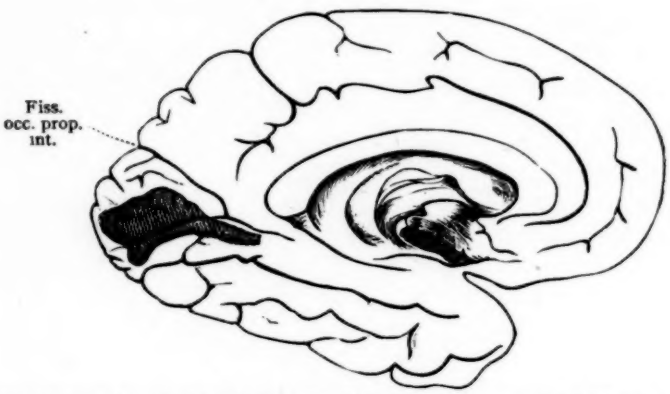
The pia was easily removable from the entire hemispheres. There were no opacities of the arachnoid, and the ependyma of the ventricles was everywhere normal.

The choroid plexuses were moderately injected. The cranial nerves, including the optic nerves, were of normal consistency. On the whole the nervous tissues were in a good state of preservation and presented every appearance of ideal health.

The internal carotids had very rigid walls, and there was an atheromatous patch on the basilar and likewise one on one of the vertebrals (*which one was forgotten to be noted*). The middle cerebral, with its primary and secondary divisions, appeared to be healthy; its occipital branch was to all appearances normal, and the three branchlets of the latter were identified.

The isthmus was carefully examined by sections, a little less than a centimeter apart; each hemisphere was examined by frontal sections a little more than a centimeter distant, and no abnormal appearance of any kind was discovered, except that noted on the inner face of the left occipital lobe. Here there was a spot of softening, somewhat of the character known as lacunar, which involved the lower part of the cuneus, and the adjoining upper part of the gyrus lingualis. The focus was triangular, the apex being directed forwards and the short side posteriorly. It extended to within a centimeter and a half of the apex of the occipital lobe, and involved half the altitude of the cuneus in the middle of the latter, and almost the entire apex of this lobe. The gyrus lingua-

lis was involved for about one-quarter of its width on the surface, and evenly from the posterior almost to the anterior extent of the lesion described. The calcarine fissure could not be identified excepting its most anterior extremity, and even at this spot both borders were softened.



Mesial face of cerebral hemisphere. Patient, Edward Tracy, occipital lobe after nature, remainder ideal. Dotted line indicates location of fissura calcarina.

The anterior border of the internal perpendicular occipital fissure was entirely healthy, as well as one quarter of its posterior border, and also both its sides more deeply.

The softening was absolute for the greater part, the yellowish rose-colored pultaceous mass running out, leaving a gap behind, whose floor was formed by a thin film of soft reddish, discolored white substance. Only in the anterior part was a patch of greenish gray tint noted, possibly the disorganized cortex of what had been the floor of calcarine fissure.

At the upper and posterior portion of the softened area the necrosis of the white substance extended further than that of the cortex for about two-thirds of a centimeter. Here the lesion had the least depth, not exceeding one centimeter. It was deepest at the lower border, coming within a half of a centimeter of opening into the posterior cornu, whose unbroken and healthy ependyma covered a part of the reddish discolored white substance referred to. At this place its depth was three and one-half centimeters.[1]

Everywhere the contrast between the healthy and diseased tissue was marked, the cortex on the margin of, and the

[1] Some of the dimensions are rendered from the partly hardened specimen.

white substance adjoining, being firm and normal in consistency and color. There was no injection of the vessels in the neighborhood.

The extent of the lesion can be best summarized in the anatomico-pathological diagnosis: thrombolic softening involving complete necrosis of the entire cortex bordering on the calcarine fissure, the upper edge of the lingual gyrus, the lower half of the cuneus, and the included white substance. It may be claimed to be as pure a case of localized cortical and sub-cortical lesion as it is ever the fortune of the pathologist to report.

The following cases are the only ones reported in which the lesion is in a locality near to the site of the lesion in the case under our observation. Those mentioned by number are found in Exner's recent work on Cerebral Localization.[1]

Cases 71 and 163 are not to be utilized, because the lesions were either multiple or extensive, as in Petrina's case, and the effects of pressure not excluded.

Case 73.—Softening between the posterior cornu and the cortex of the extremity of the occipital lobe. Here nearly the same fibres were interrupted as were destroyed in our case.

At a higher level and more dorsad. The cortex proper was not involved, but, as the lesion was directly sub-cortical, Exner is right in counting it among the cases justifying an inference of cortical function.

The difference between the lesion in Vaultier's case and the one in ours can be best expressed by saying that the former lesion, if it had opened into the ventricular cornu would have done so from above and behind, while the latter would have done so from the mesial side.

The symptoms in Vaultier's case were tremor and stiffness

[1] Untersuchungen über die Localisation der Functionen in der Grosshirnrinde des Menshen, von Prof. Sigmund Exner, Wien, 1881. Braumüller.

in the left arm and foot without real paralysis; formication in the foot; visual hallucinations recurring from time to time, the patient imagining that she saw children sitting on her bed.

Case 167.—The symptoms in this case were paralysis of both right extremities and of the facial muscles; aphasia and inability to read and write connectedly. Probably the patient would understand what was read to him, although from the history this is not distinctly discoverable. There was also right hemianopia.

The lesion in this case was a tumor of the left occipital lobe, chiefly in the occipital gyri and in the praecuneus.[1]

Case 148.—There were no motor or sensory phenomena in this case. The lesion was a right yellow softening proceeding to the interparietal fissure and extending deeply into the medullary substance. There was an old lacuna in the corpus striatum, which we can throw out of consideration, because it was evidently latent.[2]

Case 51.—In this case there was left diminution of general sensation. The lesion was a tumor of the dura mater about the size of a goose egg, which proceeded from the posterior extremity of the right aspect of the falx and penetrated between the gyri and the occipital lobe.[3]

Cases 62 *and* 63.—Peculiar visual disturbances of both eyes. The patient, for example, sees pills, but cannot count them; recognizes letters, but cannot point them out in a written word, etc. Epileptiform seizures and paralyses, which are limited to the left arm and leg. In the beginning there were also facial paralysis and rotation of the head and eyes.

The lesion was on both sides and distributed thus on the left side; the cortex of the first, second, and the anterior

[1] Jastrowitz, Centralbl. für prakt. Augenheilkunde, vol. i., Dec., 1877, p. 254.
[2] Boyer, Lésions Corticales, page 58, obs. 31.
[3] Rosenthal, Wiener Med. Presse, 1878, p. 789, Fall 4.

portion of the third occipital gyri was destroyed. It appears the destruction extended into the white substance. On the right side there was a diseased focus in a corresponding locality, only a little more anterior, so that at one place it encroached beyond the parieto-occipital fissure. On section the diseased area had a triangular shape, the apex of which was directed to the posterior cornu. In addition to these were two symmetrical foci not larger than a pea, in the anterior end of the thalami, which, as this part of the thalamus has nothing to do with vision, may be excluded, and the visual disturbance referred to the cortical lesion.[1]

These cases of Fürstner have been somewhat imperfectly cited by Exner. Looking up the original paper, we find that while the patient could recognize a key and a pocket knife, and name them when seen with the left eye, with the right eye he could not do so. The other motor and sensory phenomena disappeared, but the visual disturbance remained, to wit: he could not count the windows or beds in the ward, nor direct his movements in writing or in buttering his bread. He recognizes pills and correctly says they are as big as peas, but he cannot count them. His color perceptions were not interfered with. There was no amblyopia or hemianopia This patient had a new attack, the symptoms increasing, and then he died, when the lesion, as described by Exner, was found.

Fürstner is not accurate in locating the extent of the lesion on the mesial face of the hemisphere.

This patient could mention the names of letters with both eyes, but he could not read them when combined into a word, that is, could not read the word, nor could he point out special letters when these were named to him. It is here where Exner misquotes, for he says the patient recognizes letters but cannot point them out in a written word.

[1] Fürstner, Arch. f. Psychiatrie, Bd. viii., 1878, p. 165.

Case 90.—Peculiar hallucinatory visual disturbances, which appear in spells, and consist in subjective visual perceptions with diminution of objective vision. Both eyes are involved, the left more so than the right.

The lesion was a tumor involving the right hemisphere, destroying the first and second occipital gyri, the posterior half of the upper and lower parietal lobules, the cuneus, and a part of the praecuneus. The destruction extended into the white substance.[1]

The following cases recorded by Fürstner[2] are those in which lesions in the occipital lobe and its neighborhood have been found, but had escaped Exner's notice:

Case 1 has been described under the Cases 62 and 63, reported by Exner.

Case 2.—One of a demented paretic. In the left eye vision was generally and deeply impaired. There were intense adhesions of the pia to the cortex of the right occipital lobe involving the first and second occipital gyri; the cuneus, the cortex, and the underlying white substance being disorganized. There were similar but much slighter changes in the other occipital lobe.

Case 3.—General loss of vision in the right eye, followed by contracture of the right extremities; right unilateral epileptiform attacks, slightly involving the left side later; conjugate deviation to the left.

No lesion of parietal or occipital lobes, but on the left side a small yellow focus of the size of a bean in the posterior part of the internal capsule was found; also, a slight left hemorrhagic pachymeningitis and atrophy of the left frontal lobe.

Case 4.—In this case the recognition of objects with the right eye was almost destroyed. The key and knife test, as

[1] Gowers—The Lancet, March 15, 1879.

[2] Fürstner, Arch. f. Psychiatrie, Bd. viii., 1878.

described in Case 1, by Exner, under Cases 62 and 63, the same as in that case: The patient's gait was impaired when he closed his left eye. This visual disturbance nearly disappeared, the patient writing equally well with either eye. He finally died with an apoplectiform attack, having contracture in right arm, left hemiparalysis, and right clonic spasm.

There were found slight pachymeningitic efflorescences in the left middle and posterior cranial fossae.

Case 5.—The same disturbance in the right eye in this case as in the other patients.

Here the only lesion found was adhesion of the pia, and softening of the left lower parietal lobule extending to the apex of the temporal.

Goltz in his experiments on animals found that while loss of perception of shape only persists for a short time after a lesion, there is for a long time afterwards a considerable loss of color and space perceptions; thus, the dog sees everything in a gray fog; a whip or a piece of meat are seen but not appreciated, because the color perception is absent.

Reinhard[1] describes the case of a paretic dement, the patient being a female who could not avoid coming into collision with objects while walking, grasping at objects or designating them correctly. She described herself as seeing everything through a gray mist. The visual disturbance was equal in both eyes. There were no ophthalmoscopic changes. The chief feature consisted in a change of color sense.

Unfortunately Reinhard did not observe this himself, but rested his statements on the assertions of a nurse, who had forgotten which colors the patient had confounded.

The lesion in this case consisted in the presence of cysti-

[1] Arch für Psychiatrie. Bd. ix., p. 147.

cerci in the cortex but not in that of the occipital lobe; two cysts in the left thalamus and one between the right thalamus and corpus striature. There were also two cysts in the upper lobe of the cerebellum.

There seems to be a lack of clearness in Reinhard's statement, for, he says, the cysts are numerous on the mesial faces of the hemispheres, and again says there were none whatever in the occipital lobes.

Quaglino, quoted by Mauthner,[1] cites a case of apoplexy in which there were left hemiplegia and complete amaurosis. The hemiplegia disappeared slowly and the visual power improved. There was also incomplete left hemianopia. Although the patient used to know colors well and can now read even small print, he could not distinguish any other colors, if they can be called such, than white and black.

Mauthner also cites a case, by Boys de Loury, of fracture of the base of the skull. After recovery hemianopia and complete loss of color sense resulted.

He also mentions a case of concussion reported by Cohen, followed by quantitative loss of vision and total color blindness, with some limitation of the field of vision and slight rapidly disappearing aphasia.

In a case of Förster's, also quoted by Mauthner, a syphilitic subject who had slight cerebral symptoms accompanying a hemianopia, recovered with a limitation in the perception of red in the previously hemianopic fields.

These are all the cases of color blindness which I have been able to find recorded. The only one with an autopsy, viz., Reinhard's, loses in value because of the imperfect observation during life, and the multiplicity of lesions found

[1] Vorträge aus dem Gesammtgebiete des Augenheilkunder für Studirende und Aerzte, p. 545.

after death. The other cases were not supplemented by autopsies, so that my case seems to be the only one in which the existence of color blindness being positively established, a limited lesion justifying a physiological inference was found.

The interesting question arises whether, in view of the greater importance of the right hemisphere in vision, as established by Exner's painstaking researches, a unilateral lesion, and that one of the left side, could produce color blindness in a dextral individual. Unfortunately I was not able to determine whether the patient had been right or left-handed, although his giving his right hand when asked to shake hands, notwithstanding its paresis, would seem to show that he was right-handed.

The further question presents itself whether there is any inference to be drawn from a case like this as to the legitimacy of Munk's conclusions. Munk localizes not only the halves of the retina, but the projection of the macula lutea very narrowly on the occipital lobes of monkeys. That the area discovered by Munk cannot be an absolute area of vision, and that such a fine mapping out and limitation of retinal areas are not permissible without further and critical analysis is shown by a case like this one, where, without any hemianopic trouble, there was a general interference, both quantitative and qualitative, of visual power.

If we are to make any conclusion, it is that hemianopia is more apt to occur with convexity and internal edge lesion of the occipital lobe; that any general lesion will produce diminution of vision; but that the appreciation of color in the intellectual sphere is partly located in the calcarine fissure and its neighborhood; for it is well known that this part of the brain rind has a structure altogether peculiar to itself.

The assumption of fields existing side by side of which limited lesion in one will produce hemianopia and extensive lesion of the other, a slight general diminution of color and other perceptions is rendered very plausible by such cases as this one.

Another interesting fact illustrated by this case is the co-existence of aphasia limited to the names of those colors which were imperfectly perceived, viz., the green and violet.

NOTE ON BROMIDE MANIA, AND THE SUPPOSED COMPENSATORY ACTION OF EPILEPTIC ATTACKS.[1]

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At the meeting of this Association last year I offered a paper on "A peculiar effect of the bromides on certain insane epileptics," describing as such an acute maniacal condition that seemed to directly follow the administration of the bromides in certain cases. In that paper I hazarded a query whether the maniacal condition, instead of being directly the effect of the bromides, was not rather the result of the stoppage of the epileptic attacks which followed the exhibition of the drug. In the discussion which followed the reading of the paper, reference was made by Dr. Spitzka to a former observation of the phenomenon by Dr. Stark (Allg. Zeitcshr., f. Psych. xxxi.) which had escaped my notice, and to which he subsequently referred me by letter. I find by examining Dr. Stark's paper that he commits himself fairly to the view that the suppression of the fits is the direct cause of the maniacal irritability. His language in regard to this point in his summing up of the principal conclusions of his article is as follows (p. 385): "Many epileptics become maniacally excited with the lengthening of the intervals between the

[1] Read before American Neurol. Association, June 21, 1882.

attacks. This excitement also occurs sometimes in such cases if the attacks are suppressed by bromide of potash. With such patients a treatment must not be obstinately kept up that only increases the excitement. This disappears again after the withdrawal of the bromide of potash and the reappearance of the epileptic attacks. Such patients are relatively in better condition with regular attacks."

So far as I have seen, this is the only mention of this effect of the bromides on insane epileptics prior to the note offered this Association by me last year.

On the other hand, Dr. Hammond has called attention to a maniacal condition produced by bromide medication, which, as it did not in his cases occur in epileptics, could not be attributed to the cause credited by Dr. Stark and queried by myself.

I have not, in my comparatively limited experience with the epileptic insane, observed the peculiarity noted by Stark, that the frequency of the fits is accompanied with improvement in the mental condition of a certain proportion of patients; at least, that is not the case with those in whom maniacal irritability and violence follow the use of these remedies. On the contrary, the reverse was very notably the case with some of them: mental disturbance and irritability being both more marked after a fit or series of fits. Out of about forty insane epileptics that have come under observation in the Illinois Eastern Hospital for the Insane, but one has given any reason to suspect such an improvement in his mental condition with the frequency of the attacks, and this case, which will be noticed later, is by no means clearly one of the class mentioned by Stark.

The following case, however, is of interest in this connection, since, so far as one case can be, it is conclusive

against the view held by Stark, that the excitement is due to the suppression of the attacks, and not to the bromides. For the main facts in this case I am indebted to Dr. Moyer, the assistant physician in charge of the male wards of this Hospital, who had the special care of the patient and kept the notes of treatment, etc. I was myself also personally observant of the patient and noted his peculiarities.

W. D., aged 46, German, baker by trade, and epileptic for five years before admission. Apart from a double inguinal hernia which occasionally caused him considerable trouble, his physical condition was fair. His attacks were of the type that has been denominated "gastric epilepsy," being preceded and accompanied by marked digestive disturbance, vomiting, etc., but it could not be determined that errors of diet had any immediate part in their causation. He was at all times rather irritable, but whenever his attacks occurred more frequently than usual he was exceedingly so. They ordinarily occurred at intervals of three or four weeks, and his irritability was always more marked just before and just after their occurrence.

Sometimes he would be very violent and excited after a single fit. During the intervals he was comparatively quiet and pleasant, but suspicious and had delusions of persecution and auditory hallucination. His attacks sometimes occurred in the night, and whenever he was unusually excitable and disturbed mentally in the morning it came to be accounted for by supposing him to have had a fit during the night.

The use of the bromides was found in him to rapidly produce some of the symptoms of bromism, foul breath, acne, etc., and to be followed by excessive violence and excitement, while at the same time it suppressed the attacks. His delusions were also very much more prominent. He was being poisoned in his food, etc. With the cessation of the medication these symptoms disappeared, and any violence or unusual irritability that was observed was only that that commonly attended his disease, and was in every way milder than that observed during the continuance of the bromide treatment.

As his attacks sometimes occurred in rapid succession, and were accompanied with severe gastric disturbances and great

prostration, it was thought advisable to endeavor to suppress them by other remedies than the bromides which had been found so harmful in his case. It was found that at times an apparently threatened attack could be averted by a dose of calomel and jalap, and close attention generally to the condition of the digestive tracts. The only remedy, however, which appeared to control them and at the same time favorably affect him otherwise was a 1 per cent. solution of nitro-glycerine, under the use of which the fits were kept off for many months, and at the same time his general disposition was much improved. It was first used September 24, and no attacks occurred till December 12, when two of the lightest ones observed were noticed, and from that time till the following spring, when the treatment was intermitted, no more occurred. The only reason for its discontinuance was the fact that the quantity given had been gradually increased, and it was thought best to allow the patient to lose his tolerance of the drug and then begin again. As high as fifteen drops at a dose was reached before it was discontinued; this dose caused considerable dizziness at the time, but had no lasting bad effects. The patient's removal from the hospital, under an act of the Legislature, which put his county out of its special district, prevented a continuance of the observation.

Out of all the cases of epilepsy under my observation, so far, only eight, or about one-fifth of the whole, have exhibited to any extent the idiosyncrasy to bromides that I described in my note read last year. This is a considerably smaller proportion than was estimated by Dr. Spitzka, in his remarks on my paper, but the whole number is too small for me to offer any generalization as to its frequency. I have never met with it in sane epileptics, nor was it shown in the few insane cases I had met with before practicing in an institution for the insane.

One of the eight cases may possibly be of the description mentioned by Stark as better for the regular occurrence of the fits, but he has not yet been long enough under observation to be certain that such is the case. He is a powerfully built man, with no physical disease other

than his epilepsy, the attacks occurring pretty regularly every week or two. Under the discipline of the asylum he is moderately rational and manageable, but the history given when he was brought would indicate that he had been at times troublesome, if not extremely dangerous. The bromides when tried suppressed his fits for several weeks, but he became violently maniacal under their use. Upon the cessation of the treatment he had a series of unusually severe fits in rapid succession, and was very seriously prostrated.

In the remaining four-fifths of the epileptics, the bromide treatment was more or less beneficial, with only one exception. In this case the continuous employment for several weeks of even moderate doses, caused marked symptoms of bromism, and then there suddenly developed a sort of *status epilepticus*, which ceased with the discontinuance of the treatment.

In only one case have I observed any apparent improvement from epileptic attacks. This was that of a girl who was constantly complaining of severe neuralgic (anginic) pains and gastric disturbances, which would occasionally be completely relieved to all appearance by the occurrence of two or more epileptic attacks in rapid succession.

I offer these simply as clinical facts bearing on the question of bromide mania, and as a supplementary note to my paper of last year. I have not, as yet, found anything that will connect this idiosyncrasy to the bromides with any other clinical feature of the disease, or with any other personal peculiarity of the patients that display it.

A CASE OF CEREBRAL CONTUSION—CLINICAL HISTORY AND POST MORTEM EXAMINATION.

BY

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R. M——, male, *aet.* 58 years; a native of Scotland; by trade a painter. M. was a man of good physique, of slender but strong frame, temperate in his habits and well preserved for his years. He showed no signs of advancing age, except grayness of the hair and beard, and the decay and loss of many teeth. About three years ago I treated him for a light attack of malarial fever, which lasted but a few days About two years ago he fell from a ladder, a distance of 10 feet, and struck on his back. He was somewhat concussed, but recovered completely in a day or two, under the care of Dr. G. R. Westbrook, resumed his work, and continued in good health up to the sixth day of June, 1882. On the above date he fell from the rear platform of a horse car, was *picked up insensible*, and conveyed to a neighboring drug store, where he was attended by Dr. Merrill. After the administration of some diffusible stimulant he recovered consciousness, and was removed to his home in South Brooklyn. After reaching home he vomited. During the night he was restless, complaining of severe pain in his head, and soreness in the back and buttocks. On the following morning I found him lying on his right side, holding his head between his hands. The face was somewhat flushed, the eyes bright, the pupils normal. The pulse was very

full, hard, and quite regular at 70 to the minute. The skin was warm and dry.

He had not vomited since the evening before. The urine had been evacuated voluntarily, but the bowels had not moved. There was a light white coating upon the tongue. The temperature under the tongue was 98⅕° F. When addressed, he answered intelligently, complaining of very severe pain throughout the cranium, a tender spot at the occipital protuberance, and a lame and sore feeling in the back, loins and buttocks.

I was unable to find any signs of ecchymosis or excoriation. He was ordered twenty grains of bromide of potassium, and one minim of the tincture of aconite root, every two hours, preceded by a mercurial purge. (Hydrarg, Subsum; Jalapar pulv. sa gr. X.) The cathartic acted satisfactorily, and he had a more comfortable night, so that on the 8th there was less headache and restlessness, the pulse was not so hard, and the face was less flushed. But the coating remained upon the tongue.

The third night was still more comfortable; he had considerable sleep, and awoke in the morning with much less headache. On the 9th, he no longer held the head between his hands; he was not at all restless, except from anxiety to get about again; the pulse and temperature were normal, but he had no appetite, and the tongue was more heavily coated than before. Thinking that this might be due to the bromide, I discontinued it, except at night, and ordered a mixture of dilute hydrochloric acid, aconite and calumba.

The patient was earnestly advised to remain in bed for two or three days longer; which he promised to do. After my departure he got up, dressed himself, and went about the house for the remainder of the day. At night he became feverish and restless, tossing about the bed, complaining

of severe pain in his head, and desiring to get up continually. He was delirious throughout the night.

On the following morning, the 10th, he again lay with his head clasped between his hands. He was somnolent, but had considerable jactitation. The face was flushed, pulse strong and full, 80 per minute, the eyes bright. The surface of the body was dry and hot, though the thermometer under the tongue showed a temperature of only 99½° F.

His tongue was covered with a heavy yellow fur, and the breath was very offensive. There had been no evacuation of the bowels for forty-eight hours. When spoken to, he answered intelligently, but seemed to want to be left to himself. There was no increase of soreness over the head or back. The cathartic of calomel and jalap was repeated, with the addition of twenty grains of the resin of scammony. Thinking that there might be a malarial complication, as he resided in a very malarious district, and had previously suffered from it, I also ordered twenty grains of quinine. At night the bromide and aconite mixture was given. The following morning, the 11th, the patient was more comfortable, complaining less of pain in the head, and less inclined to delirium and jactitation. The bowels had been freely, though not violently, moved.

The tongue was, however, as badly coated as before, but the breath was not so offensive. The temperature was 99½° F. The bromide was continued, and a blister was applied over each mastoid process. At night he became so restless and delirious that it was necessary to give him six minims of Magendies' solution hypodermically, under the influence of which he lay quietly until morning.

On the 12th, the somnolence was very marked. He could be roused, and would protrude the tongue or open his eyes when told to do so, but the action was evidently automatic. The eyes were dull and somewhat blurred.

The tongue was loaded with a dry brown coating, the thickest I have ever seen. The skin and pulse were as before, the temperature 99° F. in the axilla. The urine for three days had been muddy with urates, the bowels showed no sign of spontaneous movement. There was no paresis or anæsthesia discoverable, but frequent slight spasmodic movements of both upper and lower extremities, mostly in the direction of extension. There seemed to be great tenderness over the ischial tuberosities, and, in the sacral region, there was an erythematous patch from three to four inches in diameter. From the beginning he had swallowed liquid nourishment freely, and had shown no sign of nausea, with the single exception of the vomiting, which occurred as he was rallying from the shock. On the mornings of the 11th and 12th he had twenty grains of quinine, with four grains of calomel in four powders, at intervals of an hour. The symptoms showed some signs of amelioration, but he soon relapsed and was as bad as before. It was necessary each night to administer the morphia.

On the 13th, Dr. L. C. Gray saw the case with me, in consultation. By his advice the general plan of treatment was continued, though his prognosis was unfavorable.

From this time to the end there was little change. A mixture of the bromide of quinia and hydrobromic acid was used for some days with apparent good effect, but after a slight improvement he again relapsed, and I thought it best to simply support the patient and await further indications.

With this end in view, he was ordered the following mixture: R. Quin. Sulph. ℈i.; Spts. Frumenti, Elix. Calisayæ, aa ℥. iij. M. Sig.: a tablespoonful every three hours. In addition to this it was necessary, every second or third day, to administer a cathartic of jalap and scammony, and to use morphia, either per orem or hypoder-

mically, every night. He took fluid nourishment frequently up to the last day. As the case advanced, the somnolence became more marked. The restlessness was great, particularly at night. But at any time, if left alone, he would get out of bed, or at least make the attempt to do so. With one or two exceptions, and those when he was under the influence of the narcotic, he always indicated the desire to urinate or defecate until the last day.

Finally the somnolence deepened, the convulsive twitchings became more marked, and the eyes dull and dirty, with immovable pupils. On the 2d of July he ceased to protrude the tongue, although he apparently heard the request. It dropped back toward the pharynx, and a slight trembling motion was all that could be obtained. At the same time the power of deglutition was lost. This was the first sign of paralysis of the voluntary muscles. During the night of the 2d the convulsive movements became more violent, and on the morning of the 3d he died.

The autopsy was made on the 4th of July, twenty-four hours after death, with the assistance of Dr. Emilio Burchaca, Dr. L. C. Gray and Dr. Chas. A. H. de Szigethy.

Rigor mortis well marked. Body slightly emaciated. Color of skin good; very few cadaveric lividities. The head presented no external signs of injury.

The left temporal muscle was infiltrated with blood. There was a small ecchymosis the size of a twenty-five cent piece, 2½ in. behind the coronal suture over the left parietal bone, in the peri-cranial tissue.

An inflammatory hardening of the skin over the external occipital protuberance.

A fissure of the occipital bone, commencing at about the middle of the perpendicular ridge an inch above the torcular herophili, running forward and to the left about three inches.

A smaller fissure, about half an inch long, crossed the perpendicular ridge at the inner extremity of the first; and a third ran outward to the right about two inches. The dura was firmly adherent to the skull over the entire convexity, and was removed with the calvaria. In the left cerebral fossa of the occipital bone a thin clot, covering an area of 3 to 4 square inches, lay in the arachnoid space. It was of a dull brown color. There was an ecchymosis of the pia over the entire convexity, the upper part of the cerebellum, the orbital surface of the frontal lobes, and about the pons and medulla. It was most marked over the occipital and frontal lobes, and more on the left than on the right side. On the second left temporal convolution, on a line with the anterior border of the cerebellum, a small spot of softening of the cortex. On the first and second orbital convolutions of the left side a large area of softening, which extended back as far as the horizontal portion of the sylvian fissure, running upward to the anterior commissure and encroaching upon the anterior and inferior aspect of the internal capsule.

The arachnoid fluid was somewhat increased in quantity. The hemispheres were markedly congested, particularly the cortex and on the left side. The medulla in the posterior half was also much congested, particularly so on the left side. The basal ganglia, pons and medulla were also more vascular than usual, as shown by the dark color of the ganglionic masses, and the increased number and size of the puncta vasculosa. The ventricles contained a small quantity of bloody serum, but not sufficient to dilate them. There was no effusion of lymph or pus. The thoracic organs were all remarkably healthy, except the kidneys, which were large and red.

The vessels of both trunk and brain were normal. No signs of senile degeneration.

NOTE BY DR. L. C. GRAY.—With the kind permission of my friend, Dr. Westbrook, I venture to call attention to some particulars in this interesting case, that seem to me stimulative of clinical thought. It is remarkable that no inflammatory changes should have followed during the long interval of weeks that elapsed between the receipt of the injury and death. The brain and its membranes looked almost as if their molecular changes had been suddenly arrested, like the hand of a clock, a short time after the accident. There was not a drop of pus to be seen. Is it not fairly to be presumed that this exemption from inflammation was due to the treatment? There seems to have been a strong tendency to return to the normal, but the fracture was too extensive and the extravasation too large to permit of this; and this very tendency, so evident in spite of the great injury, speaks volumes for the treatment. At a time when we encounter so many therapeutic nihilists, it is well to bear in mind a suggestion of this kind, that is probably a fact; especially in view of the *laisser faire* treatment so much in vogue, when a cranial fracture has been diagnosticated. Where is the most expert surgeon who can tell over what size of fracture and what amount of extravasation the marked tendency to recovery of this case would have triumphed? Who can set the exact limits between the amount of injury that may be recovered from and that which is irreparable? Again, a curious question arises as to whether the seeming periodicity of his rises of temperature were due to the cranial and dural trauma alone, or whether this trauma acted upon an organism possessed of the periodical habits of malaria and evoked these dormant habits?

EDITORIAL NOTES AND COMMENTS.

THE GUITEAU AUTOPSY.

There is a striking analogy between the leading features of the autopsy held on the body of the late President and that held on the body of his assassin. In both cases there had been a long and bitter controversy between medical men while the subjects of the examination lived. In both cases the examination made after death led to a renewal of the dispute, and in both cases the laity were alternately enlightened or confused by the scribes of the daily journals, who entered the field to decide those questions which the profession seemed unable to dispose of. The analogy might be carried even further, and in a direction still less favorable to the development of a high regard for medical ethics; the desire for notoriety on the part of some members of the profession was as painfully evident in both cases as the attempts of others to suppress and distort the *pre-mortem* and *post-mortem* evidence concerning the condition of the two subjects, whom not a few are disposed to believe the victims respectively of surgical and psychological malpractice. It seems, for example, quite difficult, on the assumption of an integrity of intention, to account for the statement made by a representative of the Government experts that the brain of Guiteau was entirely healthy, "only its membranes being diseased," unless we are to believe that a superintendent of a large asylum for the

insane can be innocent of any knowledge of so fundamental a relation as that existing between the blood-vessel carriers of the brain and the organ which these envelop and nourish! As difficult is it to explain the statement derived from the same source, and given to the Associated Press, that there was no asymmetry of the skull, when we bear in mind that the three separate reports, official, semi-official and volunteer, thus far published, are singularly unanimous in declaring that both the skull and brain were asymmetrical. The three reports referred to, agree in the general conclusion that the brain of Guiteau was diseased, and the only question now left for the scientist to answer, is that of the possible relation between the disease found and the mental condition of the prisoner.

In order to arrive at just conclusions, the findings in the brain of the executed man must be divided into two groups; we must discriminate between the anomalies in the shape of the skull and brain, conditions which existed throughout Guiteau's life, and the evidences of disease occurring in his later years. In other words, we must distinguish between the teratological and the pathological elements of his case.

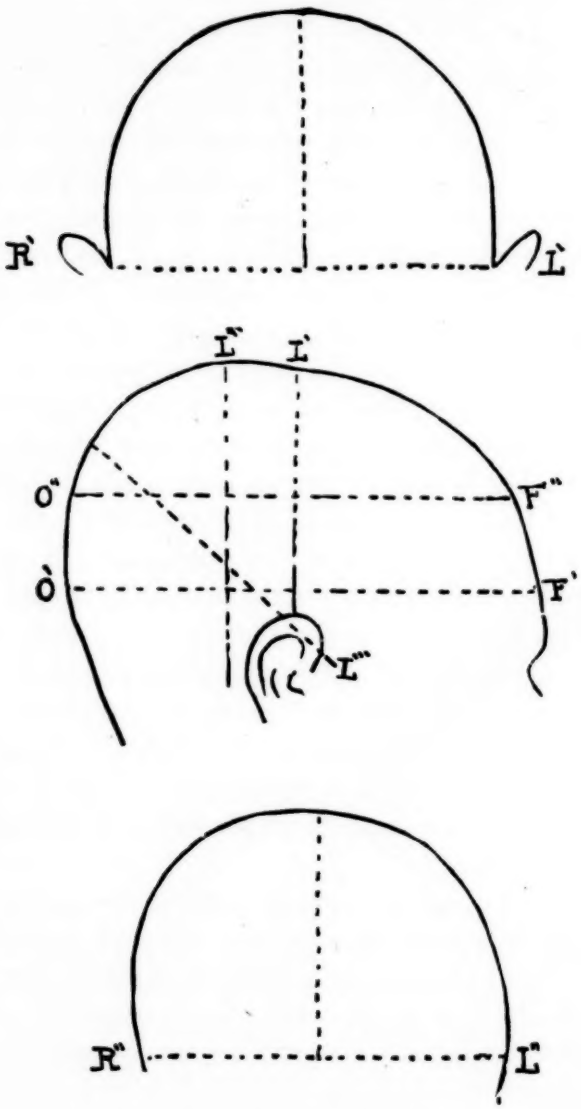
The asymmetry of the skull indicated a lesser capacity of the right half of the cranium, and this finding appears to be in harmony with the lesser development of the right cerebral hemisphere. Dr. Lamb, the curator of the Army Medical Museum, who was selected to make the examination, reports the right parietal region of the skull to have been defective, and the right cerebral hemisphere to have been correspondingly "slightly flattened." To this Drs. Morton and Dana, in their report, add that the upper part of the right post-central convolution and the right paracentral lobule, or the parts situated under the flattened parietal region, were smaller than the corresponding parts on the left hemisphere. It is unfortunate that more accurate measurements of the cranium were not made, but a

number of *fac-simile* copies of the head-cast, taken during the trial of the assassin, are in the possession of several medical men. As that cast was made in the presence of disinterested witnesses, and was admitted in evidence both by the prosecution and the Court which tried Guiteau, the accompanying tracings, taken from the original cast with lead strips, may supply the omission for our readers.

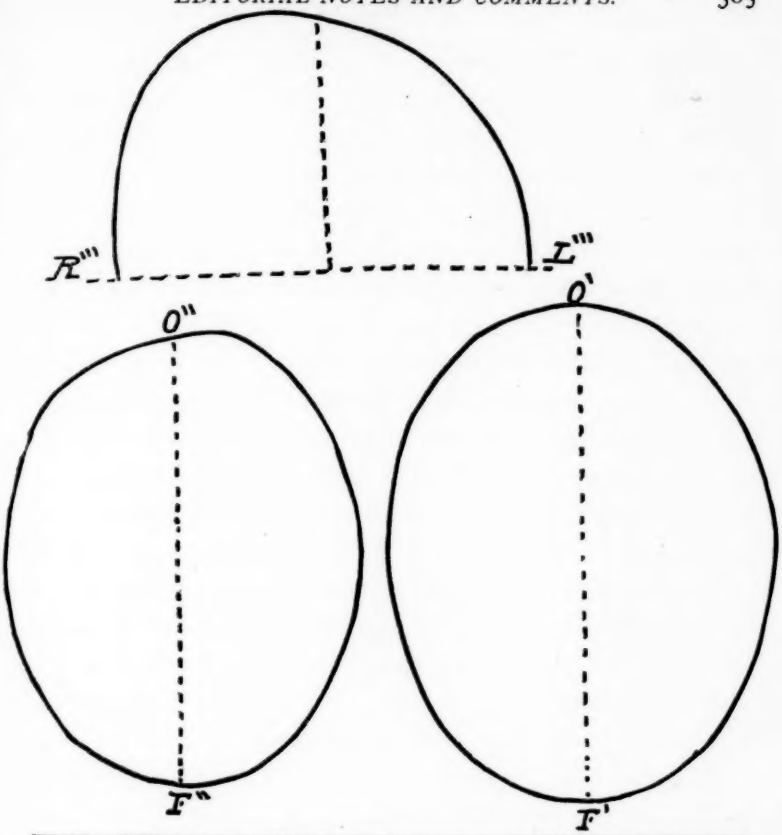
These tracings are strongly corroborative of the conclusions of the three reports, and render it all the more strongly regrettable that the occipital region was not more carefully examined. The transverse tracings illustrate this more accurate description given in one report, which reads: "The most noticeable asymmetry was a slight flattening of the upper and anterior part of the right parietal bone. The flattening ended sharply at the coronal suture. It included a space about half the size of the palm of the hand. * * There was a slight prominence (on the inner surface of the skull) corresponding to the flattening of the parietal bone before mentioned." The tracings are also in harmony with the photographs of Guiteau, taken in different positions by Mr. Bell, of Washington, as far as these exhibit the cranial contours. [See diagrams on pp. 384 and 385, and explanation on page 384.]

Much as it is to be regretted that the cranium was not accurately measured, alienists must feel still more deeply chagrined that the cerebral hemispheres were not separately weighed. In view of the manifold evidences of unequal development recorded in all the reports, this omission appears actually disastrous. The chief of these evidences are tabulated on page 385.

All the gross deviations, it will be seen on glancing over this schedule, are in the direction of a generally defective development of the right hemisphere; the atrophy of the right post-central convolution was so marked as to be char-



All the tracings are reduced to one-third the life size. The profile tracing indicates the direction of the other tracings by the dotted lines running across it; O′ F′ and O″ F″ indicate the level at which the corresponding horizontal contours were taken; L′ and L″ that at which two vertical transverse contours were taken; while the line L‴ indicates an obliquely transverse plane cutting through the asymmetrical protuberance visible at the left occipital end of the tracing O″ F″. In all the diagrams, the letter O indicates the occipital, F the frontal, R the left and L the right side of the tracings. The spectator is supposed to be looking at the head from behind in the case of the frontal tracing. (These explanations also refer to diagrams on page 385.)



LEFT HEMISPHERE.	RIGHT HEMISPHERE.
1. Post-central convolution normal. (L.[1])	1. Same more narrowed at upper part. (L.)
Post-central normal throughout, large and well-developed. (M. and D., H. and S.)	Upper one-fourth narrowed and shrunken. (M. and D., H. and S.)
2. Island of Reil, seven fissures and eight gyri. (L., M. and D., H. and S.)	2. Island of Reil five fissures and six gyri. (L., M. and D., H. and S.)
3. Calloso-marginal fissure runs the usual course, and is broken up by a gyrus at the end. (M. and D., H. and S.)	3. Calloso-marginal runs thro' praecuneus (!) to parieto-occipital fissure. (M. and D., H. and S.)
4. Parietal region shows nothing unusual as a whole. (L.)	4. Parietal region slightly flattened. (L.)
5. Para-central lobule large and well-developed. (M. and D., H. and S.)	5. Para-central lobule quite small. (M. and D., H. and S.)

[1] The letters M. and D. indicate the report of Drs. Morton and Dana, H. and S. that of Drs. Hartigan and Sowers, and L. that of Dr. Lamb.

acterized by the adjective "shrunken;" there can be no doubt that if some wasting or paralysis had been present in the periphery, localizationalists would have utilized this finding. Still more significant is the great difference between the insulae of Reil; such a one has not heretofore been noted in any except the most atypical and unsymmetrical brains. We are somewhat in doubt as to the interpretation to be given to the description of the right calloso-marginal fissure. As that fissure ordinarily constitutes the anterior boundary of the praecuneus, it is difficult to picture it to ourselves as running across the field it is supposed to bound. We are rather inclined to suspect that the praecuneus of the right side must have been smaller than its fellow, just as the para-central lobule, the Island of Reil and the post-central convolution were less voluminous and less developed on the same side. At all events, the course of the calloso-marginal fissure on the right side was exceedingly atypical, and is of the greater significance because it took this course only on one side. That the shape and relations of the cuneus, as well as the posterior aspect of the occipital extremity were not studied and noted, adds simply another disappointment to the list of regrets which pathologists will continue to express concerning this historical autopsy.

Asymmetry of the character found in Guiteau's brain is congenital and differs from the atrophy of one hemisphere which is known to be the result of various acquired disease processes. In the latter case, as long as any convolutional type can be distinguished in the smaller hemisphere it deviates no more from that of the opposite side than one hemisphere usually differs from the other in normal subjects. And where a destructive lesion is associated with the atrophy, the former manifests its past existence by unmistakable signs. It is to be further stated that a lack of development of one

hemisphere manifesting itself in a reduction of important gyri and lobes, and combined with an atypical course of a fundamental fissure, must have its origin in an aberrant development instituted at an early period of fœtal life. It is this fact which lends such atypical developments their peculiar significance. Destructive lesions may occur in the postnatal period, a whole hemisphere may be destroyed without necessarily producing insanity; in fact the further advanced towards maturity the individual is, the better able is the cerebral mechanism to endure extensive injuries without reacting in the direction of pronounced mental derangement. But the nearer the time of the injury approaches the natal period, and still more true is this if it anticipates that period, the less likely is it to leave the mental mechanism intact. An aberrant development is in this respect analogous to an early injury, but with this difference, that while the injury is limited in its effects to the functions of the special region destroyed, irritated or hampered, it is impossible to say how deeply the error in development, manifesting itself in a surface anomaly of the hemispheres, may involve that subtle architecture of the transmitting and associating tracts which a newer and rational psychology teaches us to regard as the basis of the logical mechanism. It is in harmony with this explanation that aberration in development of the kind discovered in Guiteau's brain has not yet been found in others than persons of unsound mind. The unsoundness associated with such and analogous errors of brain development covers an extensive range, including "original" or congenital and hereditary imbecility, and chronic insanity with systemized delusions, morbid projects and moral perversion. The most reliable and thorough investigators, such as Stark, Schuele, Sander, Muhr and Jensen, have noted the presence of convolutional anomalies and asymmetry in such subjects; and in a work of no less prominence than Ziemmsen's Cyclopæ-

dia, the author of the article on insanity expresses it as his belief that the only finding in the brains of constitutional lunatics of monomaniacal tendencies (Primär-Verrückte) which promises to establish a relation between the insanity and the state of the brain, consists in such architectural anomalies.

Where asymmetry of the hemispheres is marked, the innervation of the two halves of the body is apt to be unequal, and the inequality of innervation is most accentuated in the facial muscles, the side opposite the defective hemisphere being defectively innervated. It is clearly evident from the photographs of Guiteau, some of which are published with the scientific articles contributed by prominent alienists, that there was a notable defect in the innervation of the left side of the face. Indeed photographs taken from different sides appear like photographs taken from different individuals. The right side is full of animation and appears to be on the *qui vive;* the left is dull and more vacant.

It is the association of facial asymmetry, and crossed cranial asymmetry, with certain forms of hereditary and congenital insanity, that gives them their medico-legal importance. There is no more significant somatic anomaly in the insane than gross cranial deformity, for no other, aside from peripheral mal-development and the insane expression, points so directly to the organ which is the seat of healthy as well as of diseased mental action. And this fact is recognized by such eminent authorities as Bucknill, Tuke, Krafft-Ebing, Meynert, Westphal, Griesinger, Morel, Campagne, Dagonet, Legrand du Saulle, and a host of others. It acquires a still more pointed significance when a hereditary taint is shown to exist in the subject showing these signs. The blood relatives of the assassin show a bad hereditary history, as far as ascertained to date. Guiteau's grandparents had five sons and five daughters; of three sons

and two daughters the following is known: One son died insane in the Bloomingdale asylum; a second, named Abram, became dissipated, and had a simple-minded daughter; one daughter became flighty after her marriage, and had an imbecile daughter, who is now living in the asylum at Pontiac; another daughter was also flighty, and had a son who became insane and died at the Elgin asylum. The father of the assassin was eccentric and considered insane by Dr. MacFarland, superintendent of the Illinois State Asylum, at a time when Luther Guiteau visited the asylum on behalf of an insane relative by marriage. Of Luther Guiteau's children one was born club-footed and died early; a second, John W. Guiteau, occupies a responsible position in a Life Insurance Company, but is decidedly peculiar, and frequently interrupted the trial; his children are stated to be mentally healthy; a third, Mrs. Scoville, has had repeated attacks of insanity; one of her children died with a cardiac anomaly; her living daughter is a bright girl, who has had several attacks resembling petit mal, and who up to the time of the trial, and during its course, could not say "cat" or "kitten," persisting in pronouncing these words "trat" and "tritten." The assassin's history is sufficiently well-known; as a child he could not say "come along," but persisted in saying "ped along;" this subjected him to frequent chastisement, and was a fact testified to by a schoolmaster who was called by the prosecution, as well as by other witnesses. This speech defect, observed in two members of the family, is another indication of a defective innervation. It is thus seen that of the generation to which the father belonged, five members, including the father, showed mental peculiarities, and one died in an asylum, and that the proportion of insane, eccentric and defectively organized members is still greater in the generation to which the assassin belongs. A cousin residing at St. Louis, and suffering from exophthalmic goitre, is not

enumerated in the above list, as her precise relationship was not learned.

The second group of morbid appearances found in the brain of the executed assassin do not call for as extended a comment. They certainly were not anticipated by those who had considered Guiteau insane, but they were none the less unwelcome to those who had pronounced him sane and "shamming." Certainly the assassin could not feign the signs of organic brain disease; the thickening, adhesion and congestion of the dura, and the yellowish opacities of the arachnoid, found after his death; and the silent handwriting in the dead man's brain placed those experts who insisted that insanity was a visible disease of the brain in a far more precarious position than the reviling tongue of the living and loquacious assassin could have done. It is true that similar changes may be found in persons whose mental integrity had not been questioned, but a positive finding has a value which a hundred negative findings do not have, especially where insanity is claimed. Dr. Godding writes regarding this point: "As a matter of fact I have not for a considerable time seen, at the post-mortem examinations of the insane, a better marked case of the thickening and opacity left behind by a former inflammation of the arachnoid membrane." The Doctor supplements this statement by comparing it to Mercutio's exclamation about his wound:

"No, 'tis not so deep as a well, nor so wide as a church door, but 'tis enough."

To our mind these signs of repeated fluxionary hyperæmias and chronic sub-inflammatory processes are to be interpreted as results of insane excitement rather than as the fundamental cause of the insanity, which we would rather attribute to the congenital defect in brain development already referred to. That such a brain is more likely to suffer from pathological processes than a well organized one is but

natural, and inasmuch as neither intemperate habits, nor syphilis, nor a severe cranial injury are features of the assassin's history, the appearances of the membranes may be regarded as complementary evidences of insanity. That is, as far as they go, they support rather the idea that Guiteau was insane than the reverse. From the photographs taken of the convexity of the left hemisphere several hours after death, and of which copies were placed at our disposal through the courtesy of Dr. Lamb, it is evident that decortication of the upper and lateral faces of several gyri had taken place on removing the pia. No mention of this is made in any of the reports, and it is to be trusted that those who made and were present at the examination will supply the omission and account for this appearance. While we have found ourselves compelled to refer to several other important omissions in the reports, it is but just to Dr. Lamb to state that the peculiar circumstances under which he was placed tend to explain many of them. Although a Government officer himself, he was subjected to accusations and obstructions which would have unnerved many an investigator unaccustomed to enter into a wordy duel with interested legal officials and their medical counsel, who attempted to get the body of the assassin under ground as quickly as possible. This attempt was made for reasons which no just man can be in doubt about. It is extremely probable that had it not been for the firmness and honesty of Dr. Lamb even those findings, sufficient to set at rest the insanity question, as far as post-mortem findings are calculated to do so, would never have been given to the world. As it is, he has done the cause of science and truth a great service—a service which will doubtless be appreciated by the public at large, when vindictiveness and the lynch sentiment shall have passed away, and when those who conscientiously upheld the view that the assassin of our foremost citizen

was a lunatic shall be recognized to have done the land a better service than those who courted a brief but deceptive popularity by modifying their convictions in accordance with the public caprice of the moment.

E. C. S.

The *Journal of Mental Science* devotes several pages to a discussion of three recent celebrated criminal trials, namely, those of Guiteau, Lamson and McLean, in the course of which the question of insanity was raised. In opening the discussion of the last named case, its editors take particular pains to inform their readers that the case of McLean "has given rise to no psychological immoralities, because it was one upon which neither self-interest nor love of notoriety could hope to gain a hearing." It is further stated that "letters written so far back as May, 1880, showed the disordered state of his [McLean's] mind at that time."

We propose, in the course of the next quarter, to revert to these words, and we open our article with them because our esteemed cotemporary seems to intimate that the expert witnesses who took the stand during the trial of Guiteau, in the face of an unreasoning public sentiment and an unscrupulous prosecution, did so from the same love of notoriety and self-interest which prompted some persons on this side of the Atlantic to interfere in the Lamson matter. If our worthy cotemporary were not better informed with regard to American alienists than the throwing of the eminent gentlemen who pronounced Guiteau insane into one category with the seekers after a cheap notoriety who attempted to perform the same office for Lamson would warrant some in considering it to be, we would undertake to declare its statements to be prompted by a prejudice against American expert testimony in favor of insanity. As it is, we cannot help but express our regret that a journal

whose standing as an impartial critic of current psychological matters is unquestioned, should exhibit so little fairness in research in a matter strongly interesting their American confréres.

In a preceding number the same journal announced its intention of deferring any comments on the Guiteau case until it should have received the number of the *American Journal of Insanity* containing Dr. John P. Gray's summary of the trial. When it is borne in mind that the gentleman referred to was not only a witness on one side, but an assistant counselor for the prosecution, this course of our esteemed cotemporary seems strange indeed. After hearing this we are not surprised to learn that the writer is struck with awe at the fact that Dr. Gray's article extends over "one hundred and forty-six pages," and without considering the evidence at all, which he admits he was not acquainted with, curtly declares "it may be as well to state at once that in our opinion the plea of insanity which was raised in this case was not sustained by the evidence." Now, inasmuch as we have a high regard for the *Journal of Mental Science*, we submit the following issues to its editors, and trust that they will be taken up and the questions involved answered by them:

1. Can the *Journal of Mental Science* express it as its opinion that the evidence in the Guiteau trial did not sustain the insanity plea, when that evidence was not at its disposal?

2. Is the *Journal of Mental Science* unaware that Drs. Kiernan, Nichols, Folsom, Godding, McBride, Channing and Fisher (who, from reading its editorials, one might believe had answered the hypothetical question of the defence, in preference to giving an unqualified opinion as to the prisoner's insanity) have come out in published articles and letters strongly advocating the opinion that Guiteau was insane?

3. Is it fair to mutilate Dr. Channing's statements made in his article to the extent of making it appear that he believed that Guiteau's insanity was due to the defects in the Oneida Community training?

4. Is it fair to represent Dr. Folsom as raising the question whether Guiteau is on the road to becoming insane if he were to live another ten years or so, when there is not a word in Dr. Folsom's article to justify such a strange interpretation?

5. In congratulating Dr. Gray on the manner "in which he has steered his way through the intricacies of this difficult case," was the writer aware of the fact that Dr. Gray pronounced Walworth insane, although the evidence in favor of that patricide's insanity was exactly on a par with that offered in the Lamson case?

6. In representing Dr. Gray as an impartial witness, consulted by the District Attorney before the trial, was the *Journal of Mental Science* aware that the only evidence in support of this representation was that furnished by these two gentlemen who were in reality associate counsel?

7. Was it aware of the fact that Dr. Godding, an eminent alienist, and Superintendent of the only Government Asylum in the land, who was the first expert consulted, after a protracted examination pronounced Guiteau of unsound mind, and was for this reason not placed on the stand by the District Attorney?

8. Was it aware of the fact, that when the counsel for the defence discovered this fact, and proposed to call Dr. Godding in sur-rebuttal, he was excluded from the stand by the objections of the prosecution on a technical plea, and after the counsel for the prosecution had led the defence to believe that Dr. Godding was a witness favorable to them?

9. Was it aware of the fact that Dr. Spitzka testified that he had been approached by the prosecution and been in-

formed that only such witnesses would be called by the prosecution as would pronounce Guiteau sane?

10. Does the *Journal of Mental Science* not believe that in selecting witnesses favoring a given view, a premium is put on a valueless kind of medical testimony?

12. Is it correct to say: "Dr. Fordyce Barker gave scientific testimony with reference to the general question of heredity," when this gentleman stated that there was no moral or hereditary insanity, and that a deformed brain was never found in the insane?

12. Does the *Journal of Mental Science* consider it a dignified, scientific procedure for a number of experts called to prove the sanity of a criminal (granting that such criminal really is sane) to give unscientific testimony to strengthen their position?

The "experts for the prosecution" were nearly unanimous in declaring that there was *no such term in science* as moral insanity; one declared that ill-balanced persons were less likely to become insane than well-balanced persons; several stated that lunatics never showed fear nor calculated the consequences of their acts. The expert for whom the *Journal* expresses such high admiration presented a list of homicidal cases, from which those cases resembling Guiteau's had been eliminated, and stated that there was no such thing in psychiatry as moral insanity, nor pyromania, nor kleptomania, these being simply the names of crimes. In addition one-half the experts for the prosecution swore that Guiteau was sane and feigning insanity, while the other half swore that he was sane and not feigning insanity. Those who were cross-examined as to their literary attainments admitted their unfamiliarity with Maudsley, Ray and the German authorities. Regarding another, the same number of the *Journal of Mental Science* itself contains the following passage: "Dr. Wilbur deliberately charges the medical superintendents

(one superintendent only is meant by Dr. Wilbur, and he has been distinctly referred to by that distinguished writer) of asylums in America, with misleading English physicians who visit them. This is really too serious a matter to pass unchallenged. It is either true or false. If true, the good faith we always supposed an essential part of our intercourse with the members of our profession, in all civilized countries, is rudely shaken, and we ask despairingly, "What are we to believe?" We will say right here that Dr. Wilbur is able to prove every statement he has made on this head; he is certainly one of our most careful writers.

13. Is the *Journal of Mental Science* aware that the great mass of American psychologists consider Guiteau insane, and that among these men is the President of the American Association of Medical Superintendents, Dr. Walker, who wrote the following letter to be submitted to President Arthur?

36 RUTLAND SQUARE,
BOSTON, June, 1882.

I cannot think that any opinion I may have formed in regard to the mental condition of Guiteau will be of any public interest or weight, but you have asked for it, and I give it.

After a careful observation of hundreds of insane persons in the Boston hospital for a period of 30 years, I cannot resist the conviction that Guiteau is irresponsibly insane. This opinion is based on the following considerations:

A strong hereditary tendency to the disease appears in his case. His father, his sister, his uncle and his cousin, to say nothing of other blood relatives, have been manifestly insane. A marked change in his character and life began at Ann Arbor, when he was about 18 years of age, and has gone on broadening and deepening throughout his useless and vagabond existence. At one period a reputable physician certified to his insanity, and his friends were about to commit him to a hospital for the insane, when he thwarted them by a prompt escape. He has always manifested a sublime confidence in his own surpassing wisdom and abilities, a confidence shared by no other human being.

Without knowledge and training he aspired to be a political teacher, and believed himself the equal of the most eminent leaders in the Republican party. Rendering no service whatever in the political campaign, he claimed recognition by the new administration, and, as a reward for his services, a diplomatic appointment entirely beyond his capacity to fill. This he thought would secure his marriage with an educated and wealthy lady, with whom he had no acquaintance whatever. Failing to secure the reward he claimed, and excited by dissensions in the Republican party, he conceived the idea—as he claims, by inspiration of God—to "remove" the President, and to save the country from a second bloody civil war, and, at the same time, entitle him to the gratitude of those who should come into power through his act. None but a madman could believe that Grant, Conkling and Arthur and their eminent associates would applaud, protect and reward him for such a reckless act of folly in the face of an outraged and indignant nation. He prepared for the bloody deed carefully, as insane men often do. He shot the President in open day, in a public place, amid a throng, without revenge, without adequate motive, without an accomplice, without an attempt to escape, but claiming the protection of the general of the army from the terrible retribution of an outraged community. He has since consistently claimed that he was impelled to do this act by the overpowering influence of God, and that therefore he is legally but not medically insane. His defence was a wretched farce, managed without experience and without knowledge of the proper methods of presenting and establishing it. Throughout the trial he was excitable and violent, and abusive of the court, of both counsel and of the jury, alternately flattering and denouncing them. A sane man would have felt and recognized by his conduct that his safety depended on the sympathy and good will of the jury, yet, from first to last, he recklessly did all in his power to alienate and disgust them. The able experts called in his behalf, and who might have demonstrated his irresponsibility, were not consulted and were compelled to stand by in silence, or were required to give an opinion upon a hypothetical case that, by its very terms, admitted of but one answer, and so his doom was sealed.

It surely is not too late to petition that the question be even now submitted to a commission of able experts in insanity, who shall examine the case thoroughly, calmly, without haste and without the distractions of a fiercely contested trial and an abnormally excited community. And this not to prolong the miserable

remnant of his valueless life, but to spare this great nation the bitter pain and humiliation of having executed a lunatic as a malefactor.

Yours sincerely,
CLEMENT A. WALKER, M. D.

14. Is the same journal aware that the only expert who knew Guiteau's father, Dr. MacFarland, wrote as follows to the same correspondent?

"I can't for my life see how any one ever witnessing Guiteau's insane rant in the court could fail to pronounce him a stark madman, to say nothing of all his later life history, which is lunacy all over. I happened to know his father, and all his children that I have seen (3) are true scions of a thoroughly crazy stock, singularly alike in the radical essence of disease in them all. * * * The defence in the court was of itself a piece of half-crazy work, a little worse, I think, than no defence at all. Just to think of it, that my appearance in court was fought off by John Guiteau, because I could prove the father's insanity, and he "would have Charles hanged ten times over before any man should pronounce father insane."

15. Were its editors acquainted with the following views of one of our leading neurologists?

43 WEST FIFTY-FOURTH STREET,
NEW YORK, June 16, 1882.

To His Excellency the President—Sir: I have been requested to give you my views, relative to the mental condition of Charles J. Guiteau, now under sentence of death for the murder of President Garfield. I do not know that my opinion, even if it have any weight, would be of any service to the unfortunate man. For though entirely sure that he is insane, I am at the same time equally certain that he is one of those reasoning maniacs who know the difference between right and wrong, who possess sufficient power of self-control, if they choose to exercise it, and who are therefore, in my opinion, responsible for any violation of law they may commit. I do not hesitate, however, to say that the expert evidence for the prosecution was disgraceful to medical science, and is so regarded by distinguished alienists in all parts of the world, and that if Guiteau had killed any one else than

the President of the United States, or that if he had failed in his attempt, he would now be in a lunatic asylum instead of a prison.

I am, with great respect, your obedient servant,

(Signed) WILLIAM A. HAMMOND, M. D.,
Surgeon-General U. S. Army (retired list).

16. Does it not know as a fact, that in not a single psychological or general medical body has the question of Guiteau's mental state been brought forward, except by those considering him insane, and that on no occasion, either at the meeting of the Superintendents, or at that of the Boston Medical or the New York Medico-Legal Society, has any advocate of the sanity theory raised his voice to defend his view?

17. Is it acquainted with the fact, that of the four journals devoted to psychiatry and neurology in this country (one being edited by the chief expert of the prosecution, and another being partly edited by the chief expert of the defence, may be excluded) the two edited by disinterested writers unhesitatingly admit Guiteau to be insane?

There are several hundred questions of this kind which we might ask, but those already given seem to us sufficient to show our esteemed cotemporary that there are two sides to the question, and that in justice to itself it should seriously reconsider its judgment. We have no doubt that if the facts had been before them, such men as the editors of the *Journal of Mental Science* would give a verdict satisfactory to honest alienists the world over, and to posterity.

Our specialistic friends who have departed from out of the University of New York have done a brave and a spirited act. They have struck a much-needed blow in behalf of specialism. Whatever may be the reasons assigned publicly, the real cause underlying the whole affair is to be found in

the aversion of faculties to fully recognize specialists. It is always tacitly assumed that the man who treats 28 feet of alimentary canal is better than he who merely looks after the interests of 18 inches of spinal cord; or that those who ply typhoid fever patients with drugs until the disease has doggedly run its course, or those who are learnedly at hand to welcome infants whom the uterine muscles are intelligently propelling into the world, are doing more scientific and important work than those whose skill opens a new world of sight and opportunity to a myope or arrests an approaching amaurosis, or than those who turn back a mental disease or act as precise interpreters of the meaning of the dread symptoms of cerebro-spinal maladies. In other words, he who is most familiar with the special senses and the most important viscera, the brain and cord, is relegated to a position inferior to the expert of an abdominal or thoracic viscus; thus, blindly holding to tradition, the average ruling faculty refuses to do what business men in every walk of life are doing—reward superior knowledge and skill. It is a curious contradiction that in republican America the monarchical medical college faculty should thrive, wherein the government consists of a few grandees, whose indiscreet and superfluous boast it is that they are in no sense specialists, whilst in despotic and bayonet-ridden Europe the universities are so republican that a tutor's vote is as weighty as a professor's. It is rank and manifest injustice that this should be so in this country of democracy. For the continuance of such a tyranny of caste no reason can be assigned that will not look hideous in the light of day. Time will right it, and before long. We hail, then, the first rebels!

Dogmatic as are the assertions in certain quarters about the anatomy of the spinal cord, some recent experiments

made on the dog by Dr. J. Singer, of Prague (Neurolg. Centrllbltt., 1 Mai, 1882), make glaringly apparent the need of cautious assertions in this regard. Complete and incomplete transverse sections of the cord were followed by the usual ascending and descending secondary degeneration. But some results that are suggestive were obtained by sections of the posterior roots of the left first and second sacral nerves, as well as the left sixth and seventh lumbar, in a young dog. *The resulting degeneration was entirely on the left side.* At the height of the second sacral nerve the outer half of the posterior columns was entirely degenerated, the median half being only partially altered. Further upwards, as high as the entrance of the sixth lumbar nerve, the degeneration extended over the whole posterior column, although in the hinder portions many normal fibres were seen. From the fifth lumbar nerve, upwards, the normal fibres increased in the outer portion of the posterior columns. The degeneration hugged the posterior median septum, was less anteriorly, and in the cervical region was in the shape of a small triangle situated in the posterior medial point of the left posterior column, and this latter could be followed throughout the cord to the appearance of the nucleus of the columns of Goll. When the cervical nerves were cut, the degeneration was in two small median stripes that could not be followed beyond the cervical enlargement. This is rather confusing for diagrams, it must be sadly confessed, and our only hope is that the future will bring forth some flat contradiction, or some amplifier who may make clear this seeming confusion.

And whoever, in the plenitude of oracular confidence doubting the above, will still feed students on old pictures, may read with profit of Dr. Hadden's recent section of a

human spinal cord that he showed to the Pathological Society of London, and in which there was a marked ascending secondary degeneration of the anterior fundamental columns of Flechsig; *i. e.*, in the anterior root-zone, in front of each crossed pyramidal column. (*Lancet*, April 15, 1882.) It was alike on the two sides of the cord, apparently ascending, as it was wanting at higher levels. The clinical history of the case was unknown. Dr. Hadden and Dr. Gowers both alluded to a similar case, which had been reported by the latter, having a crush of the lower part of the cord as cause. In Dr. Hadden's case the degeneration was granular, swollen axis cylinders and amyloid bodies being seen at the edge of the granular degeneration; in the area itself only granular debris was seen; the blood-vessels in some parts were thickened. No other columns showed any alteration. The specimen had been two years in spirit before it had been given to Dr. Hadden.

Prof. Harting, of the University of Utrecht, sounds a warning in regard to hypnotizing the lower animals and human beings. He claims that hemiplegia ensued in six fowls whom he had manipulated.

One of our correspondents asks why, in a previous editorial, we spoke of "fornices," using the plural form for a mesal organ? The fact is that there is a fornix in each cerebral hemisphere. Each fornix arises separately, mainly from the fimbria of each hippocamp, and each fornix terminates separately in the columnae, and these continue separately in the crura as far as they can be traced. It is true that in their sub-callosal course the fornices are welded together but a division is indicated even here, and

a deeper structural union can be excluded. If the fornix were to be claimed as a mesal organ for this reason, it would be just as proper to protest against the consideration of the cerebral hemispheres as separate organs; in fact, the union of the latter through the commissures and basilar gray is much more intimate than that of the fornices.

The *Rivista Sperimentale di Medicina Legale*, in noticing the appearance of this journal, intimates that it seems destined to a long and successful career. We can hardly return the compliment more fitly than by recording our gratification at the kindly notice, and our opinion that the favorable criticism of our distinguished Italian cotemporary is itself a guarantee of our success.

Pinel, sad to say, seems to have fallen from the historic realms of light. It is claimed, apparently with unimpeachable evidence, that Vincenzio Chiarugi, of Florence, preceded him by eight years in advocating the abolition of restraint in the treatment of the insane. A letter written by Carlo Livi in 1864 to Brierre de Boismont has recently been republished in an Italian journal, and is translated by Dr. Workman in the January number of the *Alienist and Neurologist*, and this gives all the facts. Livi claims, too, that Pinel must have known of Chiarugi's writings, and yet he nowhere mentions them. It is a pity that the ruthless hand of Truth thus shatters our idols. We should like to conceive the character of a man like Pinel, who had enough courage and self-abnegation to defiantly breast the world of his day in behalf of those incapable of appreciating his efforts, to have been sufficiently large to be above petty pride. First in the field or second in the field, Pinel de-

serves all the credit given him, and we hope further discussion may remove any doubt as to his ingenuousness. Chiarugi had little or no opposition in his work of reform. Pinel, on the contrary, had long and bitter and almost despairing years of struggle to achieve his object. If Chiarugi originated the idea of non-restraint, as Livi claims, certainly this should be known and acknowledged. If Pinel thought he had himself originated the idea, and knew nothing of the Italian physician's writings, he is also entitled to almost equal credit, for an original thought springing from the brain of a man after it has sprung from the brain of another is intrinsically as valuable as that other, although the world is accustomed to judge otherwise. But we need more discussion of the subject.

From a recent case in Philadelphia, in which a certain Dr. Livingstone figured, it would appear that in Pennsylvania any one can be confined by any one else as a lunatic, if the dwelling in which he be put is only called a "Home." But if this same dwelling should be termed a house, a mansion, a residence, even a dwelling, or anything else but a "Home"—and it may be that this appellation should be spelled with a capital—an ordinary certificate of lunacy would have become necessary. This is a triumphant answer to the query of the ages, "What's in a name?" Our brothers of the long robe are fond of talking about the imperfection of medicine as a science. Our Philadelphia brothers of the long robe would do well to preserve a discreet silence anent this topic, until the legal possibility of immuring the whole population of the city within "Homes" is done away with.

MM. Paul Bert and Laffont, recently addressing the Académie des Sciences, claim that the lymphatics contract

and dilate under the influence of the nervous system just as do the blood vessels. When the abdomen of an animal was carefully opened so as to avoid any excitation from the atmospheric air, electrical stimulation of the mesenteric nerves brought about gradual shrinkage and disappearance of the lymphatics. Division of the pneumogastric nerves and stimulation of the peripheral extremities caused first a transient dilatation, then a marked and permanent dilatation of the lymphatics. It has been pointed out by Claude Bernard that curara will paralyze the lymph-hearts of the frog. MM. Bert and Laffont find that this drug does not produce the same effect upon the lymph-vessels. When curara has been used, stimulation of the mesenteric or splanchnic nerves causes dilatation of the lymph-vessels, the reverse of what takes place when curara has not been employed. These changes in the lymphatics were proven to be entirely independent of alterations in the blood vessels. Thus, fact is slowly added to fact to build up the coral reefs of science!

The Municipal Council of Villefranche, in the department of the Rhine, is evidently composed of men of taste and discernment. They are about to erect a statue to Claude Bernard, in the square bearing his name, thus paying merited homage not only to a man of genius, but to one whose sound judgment, propelled by the *vis a tergo* of his genius, has done more for physiological medicine than any man that ever lived. The Council of Villefranche will go down to posterity by means of this statue; by a graceful deed they do more for themselves than for the great Bernard, who needs no shafts of marble or tablets of metal to make his memory enduring.

It had been the intention of the editors of this journal to present an abstract of the evidence given in the trial of

Guiteau in these columns. That intention has been frustrated by the refusal of the National Legislature to print three thousand copies of the official report, as originally moved. It is scarcely to be believed that the gentlemen representing the various portions of this land at Washington could be moved to discourage the publication merely because in view of the insane antics of the condemned man, while standing under the noose, intelligent people might be led to carefully scrutinize the conduct of a trial which culminated in so strange a result. Still, it is difficult to explain their action on any other ground. We can only regret that the official minutes will not be published, because many remarkable psychological dicta are now certain to become consigned to a merciful oblivion. We regret further that, in anticipation of the publication which we now understand will not be made, we withheld a voluminous paper on Guiteau's ancestral history, life, crime and trial, from the pen of one probably more conversant with all the features of this *cas celébre* than most of those who have so far written on Guiteau's mental state. This article will probably be made the opening paper of the second volume.

We regret that the press of matter in this number has been so great as to force us to curtail our abstract department, and omit many interesting notes of the progress of neurological and psychiatric endeavor throughout the world. We hope, however, to more than make up the deficiency in succeeding issues.

REVIEW DEPARTMENT.

TOPOGRAPHICAL ATLAS OF THE BRAIN AND OF THE CEREBRAL LOCALIZATIONS. By E. GAVOY. Containing 18 life-size plates. (Atlas d'anatomie topographique du cerveau, et des localisations cérébrales, par E. Gavoy, Médecin major de 1re classe des hôpitaux militaires). Paris: Octave Doin, 1882.

According to an announcement on the title page, the plates contained in this work were drawn by the author after nature. In view of their execution and the remoteness of any resemblance between these delineations and the objects they claim to represent, we can only look upon the aforesaid announcement as the outgrowth of an exuberant fancy, a wild flight of an enthusiastic imagination, the same harmless characteristic, in short, which has rendered the neuro-anatomical plates in Sappey's anatomy such admirable and admired works of art, though, unhappily, most of the nerve-twigs represented never had any existence other than as a result of the artist's wish for the picturesque, flattering the thought that it would do no harm to "fill in" the details *ad libitum*.

Dr. Gavoy's work reminds us of Macaulay's statement that Croker's "Life of Samuel Johnson" was on a par with that leg of mutton on which the subject of the biography having attempted to dine, pronounced it to be as bad as "bad as bad could be, ill-fed, ill-killed, ill-kept and ill-dressed," inasmuch as the edition was ill-compiled, ill-arranged, ill-written and ill-printed. The text of Dr. Gavoy's work is certainly compiled, and very imperfectly at that. The coolness with which this author, in opening a work with a topographical index, ignores the splendid and important work of Bitot, is almost as refreshing as an analogous performance criticised in our January number. Meynert's work on the brain of mammals is cited from an abstract in the *Centralblatt*, and Samt is accused of veterinary practices, his paper be-

ing cited under the title: "Zur Pathologie der Rinder," that is, the pathology of cattle, instead of: "Zur Pathologie der Rinde"—the pathology of the cortex! Absolute lack of discrimination seems to be a characteristic of the author's literary researches; this is sufficiently illustrated in the citation of Seguin's paper on myelitis of the anterior horns under the heading of the relation existing between cortical lesions and secondary degeneration, the fundamental researches of Flechsig being altogether unnoticed in this connection. To make up for his deficiency in citing existing authorities, the author has, with great plausibility and readiness, manufactured new ones who will be handed down to future ages as subjects for mirth, side by side with the homunculus. Beitz, created by an American writer, and sacrificed on the altar of criticism in the second edition of that writer's treatise on nervous diseases. On page 61 Dr. Gavoy enumerates, "Betz, Mierzejewski, Batty, Türke," as authorities for certain statements, the two latter authors being evidently the outcome of the segmentative process to which Batty Tuke's name was subjected by the fertilizing pen of Dr. Gavoy.

As to the plates, they are incorrect in measurement, untrue in appearance, so badly colored that only color-blindness could excuse the tinting, and grossly incorrect in anatomical detail. Most of the representations of the cerebral surfaces exhibit gaping sulci. Plate I. represents the Island of Reil uncovered and devoid of gyri; the cerebellar folia are fearfully and wonderfully made, the artist introducing a sort of rope-twist pattern. On Plate III. the white commissure is omitted from the representation of a sagittal section of the brain in the middle line, and a middle commissure the student will likewise seek in vain. In Plate V. the abducens nerve arises from the anterior pyramids, a quarter of an inch behind the pons margin, the auditory nerve-trunk is smaller than the abducens, and half as wide as the glossopharyngeal; there is no olivary eminence, no decussation of the pyramids, and on one side the trochlearis nerve crosses ventrad of the fifth after arising in the cerebellar folia. On Plate VI. the genu of the corpus callosum has a fine gray cortical layer; the fasciculi of the corpus callosum are made to run in a sagittal direction. The irregular spots of brown pigment covering the fornix thalamus and corpus striatum of Plate VII., resembling residua of subendymal hemorrhages, are marked "choroid plexus," and on the same plate the septum lucidum is represented as composed of white substance exclusively. The most ingenious guesser

would be staggered by a thick, square-ended, horse-shoe arched, white map lying between the thalami and the splenium in Plate VIII.; turning to the text he finds that this mass represents the pillars of the fornix. Two round nuggets, fluted on the surface, in no connection with the ventricles, and apparently located in a cavity of the white substance, pass under the designation "cornu ammonis." In Plate X. we have a faint notion that these fluted barrels represent something else, but might fail to improve matters by venturing a suggestion. Figure 3, in Plate XII., is probably the most remarkable evolution of all. A round acorn-shaped body, resembling a glano penis, represents the anterior corpora bigemina, a doubly folded prepuce the posterior pair, and the body is completed by an enormous trunk taking the place of the præpedunculi. The pons not only resembles a scrotum in shape, but exhibits also corrugations like the latter. In Figure 4, of the same plate, we recognize our old friend the nugget, and find the fasciculi of the crus convoluted. What appears to be the middle cerebral artery on Plate XIV., runs superficially in the pia mater over the sylvian fissure, instead of in it, and gives off its branches there one by one, an altogether fanciful representation. The portion of the volume entitled craniography, with its accompanying plates, is much superior to the main part of the volume. As to the coloring of the plates, it may suffice for its unqualified condemnation to refer to the fact, that in Plate III. and elsewhere, the tentorium is represented of a reddish-brown color; that on Plate XII., the substantia region is a pale red; that in Plate XI. the surface of the corpus striatum is a beautiful rose color; while all the white parts of the base of the brain, including the optic nerve, are furnished with a pale bottle-green complexion in Plate XII. With these brief remarks, whose severity we regret, but which we believe to be richly merited, we conclude the consideration of this work, by doing its author the justice of saying that if it were not unreliable, badly executed and mediæval artistically and in every other sense, this work would certainly supply a want long felt.

THE DISEASES OF THE SPINAL CORD. By BYRAM BRAMWELL, pp. 300. William Wood & Co. New York: 1882.

This book is dedicated to Professors Charcot and Erb. In the preface the author acknowledges his indebtedness to Professors Charcot, Erb, Flower, Ferrier, Dreschfeld, Ross, Robertson, Ham-

ilton, Gowers, Herbert Tibbits and four other physicians. A careful perusal of Dr. Bramwell's book reveals to us nothing which is not to be found in the published works of the neurologists to whom he has alluded.

The book is handsomely gotten up, the illustrations are numerous, wood-cuts and chromo-lithographs numbering one hundred and fifty-one, and of these fifty-six are taken from the works of Charcot, Gerlach, Flechsig, Ferrier, Erb, Carville and Duret, Joffroy, Tibbits, Ziemmssen, Flower, Duchenne, Gowers and Ross.

If Dr. Bramwell has written this as a text-book for the students who attend his lectures, he has done well. The compilation which he presents is thorough and complete. The neurologist, however, will find nothing new in the work, and, lacking as it is in all freshness and originality, it can only be recommended as a text-book for the student entering upon studies in neurology.

THE BRAIN AND THE EYE. (Gehirn und Auge, "Vortraege aus dem Gesammtgebiet der Augenheilkunde.") By Dr. LUDWIG MAUTHNER. Wiesbaden: J. F. Bergmann, 1881.

This instructive compilation is in reality itself a review of the entire literature of those subjects involved in the establishment of a pathological relation between the brain and the eye. The value of such a work to the neurologist cannot be over-estimated. Probably no other sensory periphery is it so important to study, both in regard to the differential diagnosis and the physiological pathology of brain disease as the retina. And this importance in the abstract is generally recognized by our profession, though, unfortunately, accuracy in ophthalmoscopic observation and discretion in forming conclusions drawn from such observations are great desiderata with many. How often is not the diagnosis of a doubtful case of sclerosis supported by the assertion that the optic disc shows a slight greenish or bluish tinge? Is not hyperaemia of the disc frequently asserted to exist on the ground of a pinkish color of that area? And does not the existence of a narrow white rim on the temporal side of the papilla occasionally figure under the designation of a peripheral atrophy? The perusal of the brief but complete account on page 399 of Mauthner's work would be of great service to those resting a diagnosis of optic neural change on such appearances. Speaking of the normal papilla our author says: "*In toto* it appears yellowish-white, bluish-white or of a yellowish-red; more accurate focussing

of the surface shows that its inner portion reflects more red light than the outer. The coloring of this latter (portion) is not homogenous, for there appear in varying numbers roundish or elliptical spots of a dull gray or bluish or greenish color, giving thus to the outer half of the papilla a spotted appearance. The redder inner half of the papilla is much more even in appearance, and it is but rarely possible to discover a noticeable maculation. The boundaries of the papilla are also dissimilar on the lateral and mesal sides. Immediately adjoining the neural section of the papilla is a brilliant white or bluish-white ring—the sclerotic annulus. As the choroid does not absolutely reach to the neural rim, there remains visible between the former and latter a narrow streak of the sclerotic, which, however, is not equally distinct in the entire circumference of the papilla. It is most distinctly visible on the lateral papillary margin, whereas on the mesal it is often indistinct or invisible." Here is a pragmatic account; even the novice can on its perusal form a picture of the area described, while the expert will recognize the comprehensive accuracy of the description. That it will be of service to those who, like the "government" experts in the Guiteau trial, attempt to disprove the existence of insanity on the strength of an absence of "hyperaemia of the disc," and to others who "read the mind" through the retina, and to still others who, if they were to apply those tests, on the strength of which they pronounce patients with optimistic delusions to be suffering with optic nerve atrophy, and hence (!) with paretic dementia, to their own retinas, would be shocked into an incurable hypochondriasis, is the sincere hope of the reviewer. No other excuse can we offer for quoting the above description than the prevailing superficiality of some of our "clinical observers," betrayed in their accounts of ophthalmoscopic appearances in brain and spinal disorders.

The division of Dr. Mauthner's encyclopædic work, which deals especially with the pathological relations existing between the eye and the brain, does not contain any directions as to the manner in which ophthalmoscopic examinations, perimetric registrations, examinations for errors of refraction and color tests should be made, as these are given in the first two parts of the series. The physician and student desiring to familiarize himself with the methods as well as the theory of "cerebroscopy" will, therefore, have to put himself in possession of the entire series. This is to be regretted, as the division treating of the brain in re-

lation to the eye might have been issued as a volume complete in itself, if a brief description of methods had been added in the shape of a preface. The translator of the American edition now in course of publication would do neurologists a great service by adding such a preface, and issuing this part of Mauthner's work as a separate book.

In "Brain and Eye" the author discusses successively the subjects of hemiopia, and the changes of the retina and optic nerve, occurring in conjunction with brain diseases. Much the greater portions of its two hundred and fifty-five pages, in fact over two hundred, are devoted to the former subject, which is so exhaustively discussed, and embodies in our opinion so just and philosophical an explanation of the various visual disturbances, designated as "hemiopia," that we believe to do our readers a service by embodying a short abstract and discussion of this part of the work, adding a few comments and questions which naturally present themselves to the more strictly neurological investigator.

By tacit acquiescence the term hemianopia (hemianopia of Hirschberg) is now limited to visual defects due to an intracranial disturbance; Mauthner endorses this interpretation, but objects to the custom of some to term only those symptomatic visual defects hemianopias, in which both retinas are disturbed in function. It is best, he thinks, to specify whether such a disturbance is unilateral or bilateral, by prefixing the adjective "binocular" when the latter is the case.

Typical homonymous lateral hemiopia, the classical form of this disturbance of vision, is characterized by loss of sensation in the conjugate halves of the two retinal fields, by the fact that centric vision is perfect, while the periphery of the preserved visual halves is intact, and of normal extent, their light and color perception being also normal. The line dividing the blind from the functionating visual fields passes vertically through the point of fixation. It is to be noted here, that even in the blind halves a dim perception of bright lights may still be possible, either in a transitional zone neighboring to the normal halves, or over the entire disturbed area; a sharp contour may also be feebly appreciated, but the color sense is *always* lost. Mauthner uses the adjectives "paralytic" and "paretic" to indicate respectively the absolute and the partial loss of function in the disturbed halves. Suppose a man having right homonymous hemianopia and the disturbed fields are completely paralyzed, he will see the right side of a man's face only on facing him; the left side is not

appreciated, not even as a black object. If the disturbed fields are merely paretic he will see the contour of the left half of the person's face, but he will see it darkly.

There are also cases of such hemianopia where the line dividing the functionating from the disturbed visual areas does not pass through the fixation point, but to one side of it. Where there is such a deviation from the rule it is always an encroachment on the non-functionary fields, of typical hemianopia. That is, the dividing line leaves the fixation point within the normal area. It is a peculiar feature of the subjective complaints of hemianopic patients of this group that they never complain of visual disturbance of both eyes, but only of that one whose lateral field of vision is lost; in other words, the direction in which the patient is unable to see indicates to him which eye is affected. Thus in right homonymous hemianopia the right eye is complained of. Even after the latter is covered up, and the patient is shown that there is a defect in the left eye, he may insist that the latter is in order, because it is in his opinion not to be expected of the eye to see over or through the bridge of the nose. It is for reasons easily understood that left hemianopia disturbs patients less in reading and writing than the right-sided variety, at least with those nations who write and read from the left to the right side of the page, inasmuch as they are not prevented from catching up with the sequel of a sentence. The apt illustration is quoted from Jackson, *a propos* of this point, that a tailor with homonymous left hemianæsthesia and left hemianopia burnt his left hand with the hot flat-iron, because he was unable to perceive that object on his left side, while his anæsthesia prevented his appreciating the heat. Mauthner reports a case where a genuine homonymous hemianopia was, what is very exceptional indeed, recovered from. In this instance the ordinary rule, that where hemiplegia and hemianopia co-exist and the former disappears, the latter remains behind, was reversed ; in fact, the hemianopia disappeared, and the hemiplegia remained.

It is of no special interest to review here the rare phenomena of bi-temporal and bi-nasal hemianopia. These disturbances have rather a physiological value, and we regret that it is impossible to follow out the author's ingenious analysis and condemnation of the various theories designed to explain the occurrence of these symptoms as completely as we would wish to ; this would indeed necessitate the introduction of diagrams. We cannot,

however, permit the opportunity to pass of calling attention to the very original explanation of bi-nasal hemianopia furnished by Knapp, and which, we think rather unjustly, is pronounced improbable by Mauthner. Knapp believes that atheromatous degeneration of the vessels forming the Circle of Willis by leading to induration of the posterior communicating arteries, in other words, to a compression of the lateral chiasmal angles, may produce bi-nasal hemianopia. Against this, Mauthner alleges the infrequency of this disturbance in atheromatous subjects, as determined by the careful penimetric registrations of Plenck.

In discussing the question of the decussation of the optic nerve, Mauthner does historical justice to Johannes Müller. Müller is held up by most writers of physiological text-books as the founder of an unreasonable histological hypothesis, namely, that each fibre of the optic tract divided into two destined for respective retinas. As Mauthner shows, the great physiologist was himself the first to abandon this view, and to announce one corresponding very closely to the views of most modern writers.

A most remarkable error is committed by the author before us, where he discusses the absence of a chiasm described by Vesalius. He interprets it as an atavism, and proceeds to trace out the scale of the vertebrata downwards till he reaches the lamprey, and inasmuch as this animal has no chiasm, he characterizes the case of Vesalius as a reversion to the type of the lamprey. This is about as logical as if the institution of a republican form of government were to be considered a reversion to the pre-tribal form of society of primitive man. There is the superficial resemblance between the two cases adduced that the people rule or are supposed to rule themselves in both, just as there is a superficial resemblance between the optic nerves of a man who has no chiasm and those of the lamprey. But inasmuch as the lamprey's optic nerves terminate directly in the basilar gray of the floor of the fourth ventricle, while the separately running nerve tracts of Vesalius' case ran to the higher ganglia, it must be clear that the optic tract is not represented in the former instance at all, while it is a direct continuation of the nerve in the latter case. Nay, the subject of Vesalius differed more from the lamprey than the ordinary human type. In the lamprey both nerves converge towards the floor of the third ventricle ; so they do in the human type, but they failed to do so in Vesalius' phenomenon. The latter must be looked upon as an accidental variation, due to the quantitative preponderance of the uncrossed optic fasciculi, a

condition which has no parallel, and is not even approached in the lamprey.

In discussing the pathological possibilities calculated to account for the bi-nocular nasal hemianopia of Daa's patient, Mauthner fails to consider the one of an anatomical peculiarity, for which there are some grounds, as other members of the family to which this patient belonged had similar symptoms. Without entering into a long discussion of the subject of the decussation of the optic nerves, it may be well to summarize Mauthner's conclusion that the various clinical observations can only be understood on the grounds of the hemi-decussation theory. He also inclines to the belief that the phenomena of homonymous hemianopia can only be accounted for on the ground of some central arrangement of the tracts and projection fields. One thing is certain, binocular temporal, that is, heteronymons hemianopia, cannot be explained on the basis of a unilateral hemispheral lesion, either by Newton's or Charcot's hypotheses. We cannot understand how the various conflicting observations made on human subjects, and cited by Mauthner, in some of which unilateral occipital lesions produced bilateral hemianopia, in others unilateral amblyopia, can be explained on any other ground than a repetition or multiplicity of visual fields. This, in our belief, is borne out by the fact that, with experimental lesions of a certain character, the art of seeing can be relearned, while with others this becomes impossible.

Munk's so-called "soul-blindness" is very reasonably explained by Mauthner, to be equivalent to destruction of central vision. The animal can detect familiar objects of large size by peripheric vision, but it is unable to see what is directly before it; a man with the destruction of the macula lutea is as much "soul-blind" as Munk's monkeys.

The anatomical descriptions introduced by the author are very accurate and clear as far as the retina and the chiasm are concerned. Beyond that the reader will be hopelessly befogged; old and abandoned views of Meynert's are cited side by side with those accepted by Gudden, Forel and others. The fibres of the optic tract are described to run over both corpora geniculata according to Reil, to terminate in both according to Meynert; and again, not to do so according to Gudden, etc. The author has evidently no conception of the functions of intercalar ganglia, and we can the more justly forego the consideration of these parts of his work as the valuable portions are, as might be expected

from an ophthalmologist, those dealing with the pathology of the optic nerve and retina, and with the *quasi* subjective nature of visual disturbance resulting from central disease, without furnishing satisfactory anatomical or physiological explanations of them.

TEXT-BOOK ON BRAIN DISEASES FOR PHYSICIANS AND STUDENTS. (Lehrbuch der Gehirnkrankheiten für Aerzte und Studirende. Von Dr. C. Wernicke, Privat-Docent an der Universität Berlin.) Kassel: Theodor Fisher, 1881, 1882. 2 vols.; pp. 371 and 251.

This work, whose completion we have awaited with some curiosity, is the product of the pen of one of the most progressive and philosophical of the rising generation of German neurologists. The wood-cut on the pamphlet cover, representing a section of the oblongata, with its bewildering anatomy, may fairly serve to indicate the character of the contents. While thoroughly conversant with modern pathological and physiological researches, and embodying their results with his descriptions of brain-disease symptoms, Wernicke everywhere bases his disease pictures on an anatomical foundation. Here there are, for example, no diagrammatic abstractions of the mechanism of aphasia; the author boldly draws the picture of the speech field with its sub-provinces and their communicating roads on the very outline of a brain hemisphere. That this is an improvement no one will deny, for the student can recollect a fact associated with a material anatomical conception better than a naked and complex theory. The value of the opinions of the author is enhanced by the fact that many of his anatomical and pathological views are the result of original research, and that he successfully unites in himself the alienist and neurologist; in fact of him, among all the pupils of Meynert, it may be said that the mantle of his master has fallen on him.

One hundred and eighty-six pages of the first volume are devoted to an anatomical introduction. The exceedingly laconic and clear description of the development of morphology and minute structure of the encephalon they contain, is the best in any language we are acquainted with. Everywhere the influence of Meynert's teachings is visible, and the original and much-explaining views of that writer constitute, as it were, the foundation of Wernicke's descriptions. But he has not followed his instructor blindly. He has carefully noted, also, the descriptions of later

writers, particularly of the Munich school, and by numerous and laborious dissections attempted to fairly weigh the evidence for and against some of the disputed points in Meynert's representations of the brain structure. Thus he adapts Meynert's description of the tegmentum, accepting the modifications made by Forel, and on the other hand rejects Gudden's objections to Meynert's view of the course of the fornix fibres, and sustains the latter author. In this regard we are inclined to follow him. There is such a constant relation in size between the two crura of the fornix in the animal scale, their diameter is so similar in the same individual, their topographical relations so close, and their parallelism in development so complete, that we do not think a connection can be doubted. With regard to another point, we think Wernicke cannot be sustained. He supports Meynert's view that the loop of the lenticular nucleus (Linsenkernschlinge) is a cerebral continuation of the posterior longitudinal fasciculus of the tegmentum, against Forel, Gudden and others. His main reason is, that in about the same level where the one begins to disappear the other begins to appear. This fact is just as susceptible of the following interpretation: the ansa lenticularis terminates in the deep gray of the optic lobes, and in the same level the fibres of the longitudinal fasciculus originate without any direct communication between the two fibre systems. It might also be objected that his descriptions of the brachia of the corpora quadrigemina are rather theoretically than anatomically evolved. Among the omissions, one of a full description of the nervus intermedius and its origin is noteworthy.

This portion of the book is beautifully illustrated by two sets of illustrations: one set represents fac-similes of sections through the brain and its axis; the other, diagrams of the course of the fasciculi. A careful study of these would almost replace a cabinet of specimens. The frontal and horizontal sections of the monkey's brain deserve particular mention as veritable monuments of xylographic art. In one or two places the author has neglected to acknowledge diagrams derived from Henle.

In discussing Meynert's projection theory, Wernicke characterizes that author's attempt at an elucidation of brain structure as a most philosophical and happy one, but he also arrives at the strange conclusion that the confirmation of Meynert's deduction, that the frontal lobes were chiefly motor, and the occipital ones mainly sensory, was rather a fortunate accident for Meynert than a proof that his premises had been altogether correct. It so hap-

pens that the motor area of the cortex extends backward of the anterior half of the hemisphere considerably, especially on the mesal surface, and that the facts do not exactly bear out Meynert's hypothesis. On the other hand, recently observed facts in comparative anatomy and the newest observations of Flechsig tend to rehabilitate Meynert's theory in a modified form. The lenticular nucleus has a connection with the cerebellum through pontopedal fibres; the cerebellum is also directly connected with the frontal lobe through the largest detachment of the internal capsule. If the cerebellum is, as some believe, the informing depot of the finest innervation sensations, then inasmuch as it is tributary to the frontal lobes, the latter may be regarded as translation-fields for a phase of motility which is not gaugeable by our ordinary experimental methods. Wernicke says that a confirmation of Meynert's view, that a part of the pes pedunculi is a sensory tract, would be an equally accidental confirmation, inasmuch as the external part of the pyramid has not yet been traced into the posterior columns, nor the external part of the pes into the pyramids. True, but Wernicke forgets that the bundle "from pes to tegmentum," running in the stratum intermedium of the pons-level, decussates, as Meynert's mis-named "upper fine bundled pyramidal decussation," and thus reaches the posterior columns. Meynert's tract is thus reëstablished through a partly different channel from the one he described.

This disquisition is followed by a brief discussion of the experiments of the localizationalists, opening with the following lines of no little significance to those who, on this side of the Atlantic, characterize Meynert as a vague theorist: "These irritating and extirpation experiments (made by Hitzig and Fritsch) yielded nothing to surprise the adherents of Meynert's theory, but rather furnished a confirmation of *a priori* expectations." Similar conclusions favorable to the prophetic value of Meynert's dogma are drawn in the succeeding chapter on aphasia. Wernicke makes the following simple and natural division of this disturbance:

1. MOTOR APHASIA, identical with Broca's aphemia, usually produced by lesion of Broca's gyrus, characterized by inability to articulate, though the speech muscles retain mobility, and the comprehension of speech spoken is retained.

2. CONDUCTION-APHASIA, produced by lesion in the tract associating the word-hearing and the word-speaking centres; here the vocabulary of words that can be spoken is not diminished, nor is

the hearing of words interfered with, but words are used in the wrong place. The lesion is in the neighborhood of the insula.

3. SENSORY-APHASIA. While general hearing power is not interfered with, spoken words are not understood, and while the motor centre is unaffected, yet words are wrongly used, because the informing depot is destroyed. The lesion is in the first temporal and upper edge of the second temporal gyrus.

4. TOTAL-APHASIA. Both word-deafness and inability to frame spoken words are formed, the lesion involving Broca's point and the temporal gyri.

Wernicke objects to the multitudinous subdivisions of Kussmaul, and shows how the very same disturbance has been spoken of by some of Kussmaul's followers as paraphrasia, by others as word-deafness. A brief consideration of those interesting symptoms, alexia and agraphia, naturally leads our author to a review of Munk's ingenious experiments, and an appended chapter on that related subject, hemiopia, closes what we may regard as the anatomical and physiological part of the work.

A brief critique of the various themes of epilepsy is directed rather positively against Nothnagel's explanation. One of Wernicke's chief reasons for objecting to that doctrine is the great diversity of the epileptic attacks in different persons, which seems to him to conflict with the sudden anaemia theory. That vascular spasm is not the primary factor in the epileptic attack we believe. But that the sudden demonstrable vascular spasm, due probably to an irritability of an intra-cephalic vaso-motor centre, is the cause of the unconsciousness, and explains other phenomena of the epileptic attack, we think it reasonable to assume. The diversity of symptoms, some, indeed, involving the partial activity of the highest centres, can be explained only on the ground of a partial and limited nutritive shock. That this nutritive shock is due to a vaso-motor explosion, which may in its turn be due to most various causes, does not detract from the value of Nothnagel's explanation.

It is difficult for us to understand how our author can say: "The sparse clinical experiences bearing on this point (question of function of nerve nuclei) are in better accord with the (experimental) results of Hensen and Völckers than with those of Adamück." The latter author did not claim to elucidate the functions of nerve-nuclei, but only those of the corpora quadrigemina. These rule, as it were, over the scattered nuclei, on

which Hensen and his colleague experimented, and to place the two sets of results in diametral opposition is as logical as it would be to say that the experiments of a given investigator on the electrical excitability of the spinal gray are in better accord with what we know about poliomyelitis, than those of Hitzig on the cortex cerebri!

The second division of the first volume is devoted to the question of cerebral symptomatology. A very happy opening discrimination is made between focal and general cerebral symptoms, and the description of the comatose symptom series is a model of clearness, conciseness, and full of valuable practical points. In the division dealing with the epileptic spasm the discoverers of "epilepsy without unconsciousness" will find their discovery anticipated, and those who suspect focal lesions, whenever an epileptic spasm is unilateral, may also profit by the perusal of some well-known facts retailed in these same paragraphs. The remnant of the first volume is devoted to the discussion of other well-known symptoms, such as hemichorea, hemicontracture, amblyopia, hemiopia and the sensory disturbances, which stand in relation to special cerebral pathology like an alphabet to a language.

The preface to the second volume is thirty-five pages long. In it the author discusses the question of the higher cerebral functions, under the interpretation of the most recent experiments of Goltz, Munk and Brown-Sequard, and on the whole pronounces against the leading German and French opponents of the localization doctrine. In concluding the preface, the author admits that a further analysis of many topics which he intended to discuss in the work before us has shown him the necessity of undertaking further critical researches, and that, therefore, he has postponed their consideration for some years. The second volume is exclusively devoted to cerebral hemorrhage and softening exclusively. Under each heading the general subject of hemorrhage and encephalomalacia are discussed, and then the symptoms accompanying these lesions in special brain regions are analyzed in topographical order. Little is to be said of this part of the work, except that it is exceedingly thorough, and perhaps more compilatory in character than the first volume. We are inclined to differ with the author as to the frequency of the miliary aneurismal change, as the cause of hemorrhage, and believe that more prominence should have been given to Lechner's researches in syphilitic hemorrhages. Wernicke introduces a new term, "acute haemorrhagic polien-

cephalitis superior," to designate a process resembling the inflammation of the anterior spinal cornua, and affecting the nuclei of the oblongata. This disease is clinically manifested as an acute bulbar paralysis. A much better term, in our opinion, etymologically, would be "myelencephalic erythromalacia," or "acute myelencephalitis," as "myelencephalon" is the analogue of "myelon."

We trust that the author will return to his task at no distant time, and complete what promises to be a most useful undertaking.

SOCIETY PROCEEDINGS.

PROCEEDINGS OF THE NEW YORK NEUROLOGICAL SOCIETY.

Seventy-seventh Meeting, May 2d, 1882.

A regular meeting of the New York Neurological Society was held on the evening of May 2, at a quarter past eight o'clock, the President, Dr. T. A. McBride, occupying the chair. The minutes of the previous meeting were read. Dr. Seguin objected to their acceptance, inasmuch as he believed the minutes to be incorrect in stating that Dr. Spitzka had been nominated before Drs. Gray and Morton had resigned. After some remarks by Drs. Dwinelle, Gray, Hammond and Seguin, the motion to accept the minutes as read was put and carried. Dr. Seguin then moved to proceed to miscellaneous business. Dr. Hammond thought that this could not be done without suspending the By-Laws, which expressly prescribed what business should be done at this meeting. Dr. Seguin persisted in his motion, and the President ruled it out of order. Dr. Seguin then appealed against the decision of the Chair, and the vote was taken, showing 9 votes in favor of sustaining and 15 votes against the decision, which was, therefore, overruled. Dr. Seguin then moved to proceed to miscellaneous business, his motion being carried by 20 votes to 8. Dr. Seguin said he was delegated by a number of members of the Society to present a protest against the manner in which the canvass and election for the office of President of the Society had been conducted. He proceeded to read the protest, to which were appended the signatures of 35 members. It was moved and seconded to place the protest on the minutes and to accept it. A lengthy discussion arose, in which Dr. Gray gave his reasons for having declined, and resented the reflection made by Drs. Peters and Seguin, that

he had been under a "moral obligation" to remain in the field as a candidate, while Dr. McBride gave numerous reasons for considering the movement a personal one, among these the fact that the protest had been very privately circulated. Dr. Harwood asked Dr. Birdsall, who, with Drs. Kinnicutt, Burge, Peters and Seguin, disclaimed a personal motive, whether he would have signed the protest if *he* had been elected? Dr. Birdsall not replying, Dr. Hammond rose and volunteered to answer the question, his answer being a decided negative, and added that it served to characterize this protest sufficiently that it was signed by some men who had never attended a meeting of the Society, who did not know a thing about the merits of the case, and others who had, if a violation of the By-Laws had been committed, been as guilty of such a violation as any one, they having voted for Dr. Birdsall, who had been nominated on exactly the same terms as the successful candidate. In conclusion he asked Dr. Birdsall how it happened that he had allowed himself to be nominated not only for the Presidency, but also for the First Vice-Presidency? Dr. Birdsall replied that he had done so because he had been unsuccessful in the ballot for the former office. Drs. Putzel, Weisse, Rockwell, Gibney and Burge took part in the discussion, and the vote being put, Dr. Hammond stated it was clear that the house was packed, that all parliamentary precedent would be overruled, and he, therefore, recommended those opposing the passage of the motion to abstain from voting. The motion was carried by 21 affirmative votes, no negative ones being cast. It was then moved to proceed to the regular order of business, which was done. The President, Dr. T. A. McBride, delivered a brief retiring address, introducing Dr. E. C. Spitzka, his successor, who addressed the Society as follows:

GENTLEMEN—It has been the custom of your presiding officers to waive the privilege of delivering a formal inaugural address, and to utilize the time at their disposal by reading a scientific contribution instead. I believe that there are reasons which will excuse a deviation from so excellent a precedent to-night. This is the tenth anniversary of the organization of the New York Neurological Society, and the commencement of its existence as an incorporated body. There are no generally accessible official minutes of the interesting proceedings of an eventful past, and I have, therefore, considered it proper, inasmuch as arrangements have been made for regularly publishing our future transactions, to utilize this opportunity, furnishing at least an outline

of our history as a preliminary and complimentary record. The Society was instituted March 10, 1872, at a meeting of seven members of the medical profession of this city, assembling at the call of Dr. Wm. A. Hammond. For the first two years it transacted no business of importance, and it was not until the spur of rivalry was applied to it that it reorganized on the 6th of April, 1872, the proceedings being opened by an address of its founder. Dr. Hammond, referring to the fact of the recent organization of the New York Society of Neurology and Electrology, said: "It is now proposed to revive this Society, and proceed to active work. Its efforts are to be directed more particularly to the study of cases and pathological specimens, leaving to our sister society the discussion of papers of a theoretical character. The interests of the two societies—that is, this Society and the New York Society of Neurology and Electrology—need not, therefore, conflict, for gentlemen who are members of both bodies will have an abundant opportunity of investigating the science of neurology in all its phases."

The current of neurological research in this city thenceforth flowed on in divided channels, whose streams united after a separate course of three years, when the Neurological Society became materially strengthened by the accession of a majority of the members of the dissolving kindred body, who joined in response to an invitation extended them at the May meeting of the session, 1877-1878. Since that date the career of the Neurological Society has been uniformly successful, its membership has been steadily increasing, the standard of the contributions offered has been raised, and my predecessor has left the Society in a state of high financial and general prosperity.

I herewith append a list of those who at various periods have been members of the Society, with the date of their election and that of the retirement, removal or death of those no longer on the roll, as well as their places of honor and trust held in the Society. It may prove an interesting record in the future.

R. W. Amidon, March 3, 1879.—J. W. S. Arnold, July 6, 1874; dropped April 2, 1877.—M. J. Asch, June 1, 1874; dropped April 2, 1877.—T. S. Bahan, May 4, 1874; dropped April 2, 1877.—A. B. Ball, December 2, 1879.—J. W. Barstow, May 4, 1874.—G. M. Beard, April 2, 1879.—W. R. Birdsall, March 3, 1879.—E. Bradley, December 2, 1879.—E. P. Brown, January 9, 1877.—L. D. Bulkley, April 2, 1879; resigned.—C. S. Bull, April 2, 1879; resigned.—T. H. Burchard, April 5, 1881.—J. H. H. Burge, April

6, 1874; Councillor, 1874-1876; 1st Vice-President, 1876-1878.—E. W. Burnett, February 7, 1882.—J. G. Cardner, April 6, 1874.—J. F. Chauveau, June 1, 1874.—T. E. Clarke, April 6, 1874; 2d Vice-President, 1876-1877; dropped April 2, 1877. J. M. Cleveland, September 7, 1874.—S. G. Cook, April 6, 1874. —J. L. Corning, December 7, 1880.—P. W. Cremin, March 6, 1874.—T. M. B. Cross, April 6, 1874; Councillor, 1874; resigned from Council May 3, 1875; dropped April 2, 1877.—J. E. Culver, April 6, 1874.—G. F. Daly, January 6, 1880; removed.—C. L. Dana, April 5, 1880.—J. C. Darby, December 7, 1874; Councillor, 1876-1877; deceased.—A. A. Davis, April 6, 1874; dropped April 2, 1877.—J. C. Davis, December 2, 1878; resigned November 3, 1879.—B. F. Dawson, April 6, 1874; resigned.—L. De Brémon, April 6, 1874.—J. H. Denny, November 5, 1877; removed.—R. Derby, July 6, 1874; dropped.—G. A. Dixon, April 5, 1881.—A. N. Dougherty, April 6, 1874.—Wm. H. Draper, November 5, 1877.—E. Dupuy, January 9, 1877; removed.—W. H. Dwinelle, October 4, 1874.—N. B. Emerson, June 4, 1877; resigned.—H. P. Farnham, July 6, 1874.—W. H. Farrington, December 2, 1878. —E. Frankel, April 6, 1874; dropped.—V. P. Gibney, September 7, 1874; Councillor, 1878-1880; 2d Vice-President, 1880-1882.—D. H. Goodwillie, May 3, 1875.—L. C. Gray, February 4, 1878; 2d Vice-President for unexpired term, 1879-1880; 1st Vice-President, 1880-1882; Councillor, 1882-1883.—J. H. Gunning, February 3, 1879.—C. E. Hackley, May 4, 1874; dropped April 2, 1877.—W. S. Halsted, April 5, 1881.—A. McL. Hamilton, April 6, 1874; Councillor for unexpired term, 1875-1876; resigned.—F. H. Hamilton, May 4, 1874; dropped.—Wm. A. Hammond, April 6, 1874; President, 1874-1876; Councillor, 1876-1882.—Græme Hammond, April 6, 1880; Recording Secretary, 1882.—J. C. Hannan, July 6, 1874; dropped.—W. F. Hardy, November 1, 1881.—E. C. Harwood, May 4, 1874; Treasurer, 1877-1883.—M. H. Henry, April 6, 1874; dropped April 2, 1877.—Max Herzog, April 6, 1874; Corresponding Secretary, 1874-1880; deceased.— E. W. Hoeber, July 6, 1874.—E. F. T. Horst, November 5, 1877.— F. E. Hutchinson, April 6, 1874; dropped April 2, 1877.—W. A. James, April 6, 1874.—A. Jacobi, April 2, 1877; resigned June 6, 1882.—M. P. Jacobi, April 2, 1877; Corresponding Secretary, 1880-1883.—H. H. Kane, June 6, 1882.—A. O. Kellogg, September 7, 1874; dropped April 2, 1877.—J. Kennedy, April 6, 1874; dropped April 2, 1877.—J. G. Kiernan, January 9, 1877; Councillor, 1877-1878; 2d Vice-President, 1878-1880; resigned October 6, 1879.

—F. P. Kinnicutt, June 4, 1877.—F. B. Lawson, April 1, 1878.—C. A. Leale, April 6, 1874; Councillor for unexpired term, 1875-1876. F. B. Lente, April 6, 1874; Councillor, 1874-1876.—A. H. P. Leuf, March 2, 1872.—R. P. Lincoln, April 2, 1877.—J. S. Lombard, January 4, 1875 ; removed.—J. Lynch, April 6, 1874; removed. —A. E. Macdonald, April 6, 1874; Councillor, 1876-1877; resigned.—E. C. Mann, January 9, 1877; dropped.—J. B. Mattison, January 6, 1880.—E. J. Messemer, December 7, 1880.—M. J. B. Messemer, March 7, 1882.—T. A. McBride, April 2, 1877; Councillor, 1878-1880; President, 1880-1882; Councillor, 1882-1883.—McClellan, January 3, 1876 ; dropped April 2, 1877.—J. D. McGill, April 6, 1874; removed.—M. A. Miller, April 6, 1874; dropped April 2, 1877.—D.A. Morse, April 3, 1876; removed.—J. S. Mosher, October 4, 1875; removed.—Bowditch Morton, December 6, 1881.—Wm. J. Morton, November 5, 1877; Secretary for unexpired term, 1878-1879, and from 1879-1882; 1st Vice-President, 1882-1883.—Alexander Murray, April 6, 1874; Treasurer, 1874-1875; deceased.—T. J. Naylor, November 5, 1877; deceased. —W. F. Nealis, April 6,1874; dropped April 2,1877.—H.D. Nichols, May 4, 1874; removed.—J. J. O'Dea, July 6, 1874; dropped April 2, 1877.—R. J. O'Sullivan, April 2, 1877.—M. A. Pallen, January 4, 1874; resigned.—C. I. Pardee, April 6, 1874; dropped April 2, 1877. —Ralph Parsons, May 4,1874; dropped April 2,1877.—G. A. Peters, May 4, 1874; dropped April 2, 1877.—J. C. Peters, April 6, 1874; 1st Vice-President, 1874-1876; President, 1876-1877; Councillor, 1877-1882—P. B. Porter, September 7, 1874; dropped April 2, 1877. —S. D. Powell, April 6, 1874; resigned March 3, 1879.—L. Putzel, February 7, 1882.—F. H. Rankin, April 6, 1874; dropped April 2, 1877.—B. Robinson, April 2, 1877.—A. D. Rockwell, April 2,1877 ; 2d Vice-President, 1282-1883.—A. Steven Rogers, April 6, 1874; Councillor, 1874-1875; deceased.—D. B. St. John Roosa, April 6, 1874; Councillor, 1874-1876.—F. L. Satterlee, April 6, 1874; Councillor, 1874-1877.—L. A. Sayre, April 2, 1877; resigned February, 1882.—L. H. Sayre, April 2, 1877; resigned February, 1882.—N. M. Schaffer, January 3, 1876.—J. C. Shaw, January 9, 1877; President, 1878-1880; Councillor, 1880-1882.—J. Seesel, February 4, 1878.—E. C. Seguin, January 9, 1877; President, 1877-1878; Councillor, 1878-1883.—H. M. Sims, April 6, 1874; removed.—J. M. Sims, April 6, 1874; 2d Vice-President, 1874-1876.—F. G. Snelling, April 6, 1874; removed.—E. C. Spitzka, January 9, 1877; 2d Vice-President, 1877-1878; 1st Vice-President, 1878-1880; President, 1882-1883.

—W. G. Stephenson, October 5, 1874.—J. B. Stonehouse, February 7, 1876; dropped April 2, 1877.—R. W. Taylor, May 4, 1874; dropped April 2, 1877; re-elected June 4, 1877.—S. Teller, June 1, 1874.—G. Thompson, June 1, 1874; removed.—S. O. Vanderpoel, October 4, 1875; dropped April 2, 1877.—T. R. Varick, April 6, 1874.—C. Wagner, April 6, 1874; Treasurer, 1876-1877; Councillor, 1877-1878; Recording Secretary, 1878-1879.—J. H. Wakeman, April 6, 1874; deceased.—B. A. Watson, April 6, 1874.—L. Weber, January 6, 1880.—F. D. Weisse, June 1, 1874.—G. W. Wells, April 6, 1874; Recording Secretary, 1874-1878; resigned June 3, 1878.—B. F. Westbrook, December 2, 1878.—J. S. Wight, January 4, 1875.—J. S. Woodside, March 7, 1882.—King Wyllie, April 6, 1874; dropped April 2, 1877.

There have been brought before the Society during the last eight years, one hundred and thirty contributions to neurology. Of these, eighty were formal papers; two, reports on administrative and medico-legal questions; twenty-four, demonstrations of normal and pathological specimens and of instruments, and twenty-four case reports, of which fourteen were supplemented by an exhibition of the patients. It may be safely stated that the record of no other metropolitan medical body has been equally fertile in scientific productions within the same period, and the interesting and permanently valuable character of the discussions is attested by the fact that they have been reported, not only in a number of American medical periodicals, but also in trans-Atlantic journals of high standing.

It is not alone in strictly scientific provinces that this body has been active. The New York Neurological Society has also made its mark in a field which is not without reason considered dangerous ground for a medical society to tread. It is a proof not of its power as expressed in the number and influence of its members, but of the scientific truth and moral justice of its position, that it has come out victorious from the long and bitter contest forced on it and waged in behalf of a more humane and scientific management of our insane asylums. While the scientist in his closet will measure our merits by the character of our contributions and discussions, the people at large will appreciate them rather on the strength of the fact that this comparatively small organization has not hesitated to take up and has carried to a successful end a humanitarian and scientific agitation opposed by the great odds of the political and social machine. The triumph of the truth in this instance should confirm the wavering

in the belief, that in this progressive age the promulgators and defenders of the truth need not despair of living to see its acceptance. While the brunt of the battle has fallen on the Neurological Society, it would seem a peculiarly appropriate moment to acknowledge our indebtedness to some valuable allies, such as the editors of the *Journal of Nervous and Mental Diseases*, then of Chicago. It seems also just to acknowledge that several members of the American Association of Asylum Superintendents have, at the last meeting of that body, made a vigorous but ineffectual protest against the political system of asylum management; it is trusted that they will eventually, also, meet with success.

The first Constitution and By-Laws of this Society, adopted April 6, 1874, were modeled on those of the New York Medico-Legal Society. The chief events of an historical interest in our annals are the following: the recommendation to the public by the Society of certain measures calculated to diminish and arrest the propagation of hydrophobia, at a special meeting, held July 6, 1874; the passage of resolutions condemning the anti-vivisection mania at the stated meeting of December 7, 1874; the passage of resolutions inviting the members of the discontinued Society of Neurology and Electrology to join this association, April 2, 1877; the report of the committee recommending the addressing of a memorial to the Legislature of New York State, praying for an inquiry into the management of our insane asylums, April 1, 1878; acceptance of a report of a Committee on Asylum Abuses, consisting of Drs. T. A. McBride, E. C. Harwood and others, containing facts and presumptions on which the memorial to the Legislature was based, October 7, 1878; invitation from the Connecticut State Medical Society, asking that a delegate be sent to their meeting, responded to by the appointment of Dr. Hammond as such delegate, May 5, 1879; appearance of four members of the Society, Drs. Wm. A. Hammond, Wm. J. Morton, E. C. Spitzka and J. G. Kiernan before the Senate Committee on Public Health, relative to the question of asylum management, May 8 and 15, 1879; presentation and unanimous acceptance of a report of the Committee on Asylum Abuses, in answer to the report of the above Senate Committee, January 6, 1880; appointment of a delegate to attend the coroner's inquest held on the body of Maria Ottmer, a lunatic, February 3, 1880; adoption of a revised Constitution and By-Laws, drawn up by Drs. T. A. McBride and Wm. J. Morton, November 1, 1881.

The following is as full a list of our meetings, and the papers and other contributions made at them, as I am able to gather from the recorded minutes :

STATED MEETING OF MAY 4, 1874: *The effects of Alcohol on the Nervous System :* Paper by Dr. Wm. A. Hammond.——STATED MEETING OF JUNE 1, 1874: Paper by Dr. T. M. B. Cross, entitled *A Contribution to the Etiology and Treatment of Sciatica* ——SPECIAL MEETING OF JULY 6, 1874: Discussion of the case of William McCormick, who died of *Hydrophobia*, related by Drs. Alexander Hadden and Wm. A. Hammond.——STATED MEETING OF SEPTEMBER 7, 1874: Paper by Dr. Clinton Wagner, entitled *Certain Nervous Affections of the Throat.*——STATED MEETING OF OCTOBER 5, 1874: Paper by Dr. George Burr, of Binghamton, on *The Insanity of Inebriety*, and another by Dr. James O'Dea, of Staten Island, on *The Philosophy of Suicide.*——STATED MEETING OF NOVEMBER 2, 1874: Presentation of a specimen of *Cerebral Hemorrhage*, by Dr. Wm. A. Hammond, and relation of an obscure case of *Functional* (*?*) *Nervous Disease*, by Dr. Messenger. ——STATED MEETING OF DECEMBER 7, 1874: Relation of a case of *Traumatic Epilepsy*, occurring ten years after the injury to the head, cured by trephining thirteen years after the accident, by Dr. John C. Darby ; also a Paper entitled *The Neurotic Origin of Disease, and the Action of Remedies on the Nervous System*, by Dr. F. D. Lente.——STATED MEETING OF JANUARY 4, 1875: Paper entitled *The Practical Working of the New Lunacy Law*, by Dr. A. E. Macdonald.——STATED MEETING OF FEBRUARY 1, 1875: Paper on *Gynæcology in its Relation to Neurology*, by Dr. Montrose A. Pallen.——ADJOURNED MEETING OF MARCH 9, 1875: Paper entitled *Contributions to the Study of General Paralysis of the Insane*, by Dr. A. O. Kellogg, of Poughkeepsie; also exhibition and description of a *New Differential Thermo-electric Calorimeter*, by Dr. J. S. Lombard, of England.——STATED MEETING OF APRIL 5, 1875: Paper by Dr. F. L. Satterlee, entitled *The Neuroses of the Skin.*——STATED MEETING OF MAY 3, 1875: Paper by Dr. Wm. A. Hammond, entitled *The Brain not the Sole Organ of the Mind.*——STATED MEETING OF JUNE 8, 1875: Paper by Dr. Alexander Murray, on *Electricity as used in Parturition, Post-partum Hemorrhage, and the Resuscitation of the Newborn.*——STATED MEETING OF OCTOBER 4, 1875, detailing the uses of *Lombard's Differential Calorimeter* in the recognition of nervous derangements, by Dr. Wm. A. Hammond.——STATED MEETING OF NOVEMBER 1, 1875: Paper entitled *Notes on the*

Pathology of the Sympathetic System, by Dr. J. Edwards Clark. ——STATED MEETING OF DECEMBER 6, 1875 : Paper on the *Cause of Vice-President's Wilson's Death*, by Dr. Wm. A. Hammond.——STATED MEETING OF JANUARY 3, 1876 : Paper *On the Trifacial Nerve.* Read by Dr. D. H. Goodwillie.——STATED MEETING OF FEBRUARY 7, 1876 : Paper entitled *Notes on the Clinical History of Hysteria*, by Dr. J. C. Peters.——STATED MEETING OF MARCH 6, 1876 : Paper entitled *A Contribution to the Pathology and Treatment of Pertussis*, by Dr. Seneca Powell.——STATED MEETING OF APRIL 3, 1876 : Paper by Dr. Charles M. Desvernine on *The Diagnosis of the Seat of Cerebral Lesions*, also a report upon a post-mortem examination of a case of *Acute Periencephalitis*, by Dr. C. T. Whybreer.——STATED MEETING OF MAY 1, 1876 : Paper included in the inaugural address of Dr. J. C. Peters, entitled *Diagnosis of the Location of Cerebral Hemorrhage, based upon Anatomy, Physiology and Pathology.*——STATED MEETING OF JUNE 5, 1876 : Paper by Dr. J. S. Wight, of Brooklyn, on *The Correlation of the Sunbeam and the Nerve Current.*——STATED MEETING OF OCTOBER 2, 1876: Paper by Dr. Thomas R. Pooley, on *Hemiopia from Cerebral Disease*, followed by an interesting discussion on the subject of the decussation of the optic nerve, in connection with the paper. ——STATED MEETING OF NOVEMBER 6, 1876 : Paper entitled *Hysterical Contractures*, by Dr. Wm. A. Hammond, provoking a very animated debate between Drs. Sayre, Peters, Pallen and the reader of the paper.——STATED MEETING OF DECEMBER 4, 1876 : Paper entitled *Pain and Pleasure in their relation to Mental Development*, by Dr. J. C. Hannan, and the narration of a case of *Hydrophobia*, by Dr. Henry S. Downes.——STATED MEETING OF JANUARY 9, 1877 : Paper on *General Paresis*, by Dr. A. E. Macdonald. ——STATED MEETING OF FEBRUARY 5, 1877 : Paper entitled *Psychological Pathology of Progressive Paresis*, by Dr. E. C. Spitzka, illustrated by colored drawings and pathological specimens.—— STATED MEETING OF MARCH 5, 1877 : Paper by Dr. E. C. Mann, on the *Pathology and Morbid Histology of Chronic Insanity*, illustrated by micro-photographs.——STATED MEETING OF APRIL 2, 1877 : Paper on *Katatonia*, a new clinical form of insanity, by Dr. J. G. Kiernan, also another paper by Dr. M. A. Pallen, on the *Menstrual Neuroses.* Both papers were discussed at the following meeting.——STATED MEETING OF JUNE 4, 1877, a brief communcation by Dr. J. G. Kiernan, on the *Patho-Psychology of Chronic Alcoholism, and its Relations to Progressive Paresis and Epi-*

lepsy. Dr. E. C. Spitzka also exhibited a peculiar case of *Reflex Spasm*, involving the diaphragm and the respiratory muscles, referred to irritation of the anterior pulmonary plexus by a post-sternal tumor.——STATED MEETING OF OCTOBER 1, 1877: Presentation of specimens, illustrating the anatomy of the *Lemniscus and Posterior Longitudinal Fasciculus of the Tegmentum*, by Dr. E. C. Spitzka, and of such illustrating the development of *Ependymal Granulations*, by Dr. E. C. Seguin. These demonstrations were followed by the reading of a Paper by Dr. R. W. Taylor, entitled *Sciatica as caused by Syphilis.*——STATED MEETING OF NOVEMBER 5, 1877: Presentation of specimens from a case of *Bulbar-Paralysis*, by Dr. E. C. Seguin, and Paper by Dr. Wm. A. Hammond on a *Certain Imperfectly known form of Cerebro-Cardiac Derangement.*——STATED MEETING OF DECEMBER 3, 1877: Presentation of specimens of *Cholesteatoma* (Epithelioma) of the *Cerebral Dura*, by Dr. J. C. Shaw, also of specimens illustrating the pathological changes of the *Medulla Oblongata in Progressive Paresis*, by Dr. E. C. Spitzka, and exhibition of a patient having a *Rare Form of Laryngeal Paralysis*, by Dr. Beverley Robinson. Dr. V. P. Gibney then read a paper entitled *The Paralysis of Pott's Disease*, illustrated by colored drawings.——STATED MEETING OF JANUARY 3, 1878: A demonstration of some *peculiar markings of medullated nerve fibres*, by Dr. J. C. Shaw. Exhibition of a patient suffering from *Facial Paralysis* by Dr. E. C. Seguin, and a Paper by Dr. J. G. Kiernan, entitled *Trophic Disturbances as found in the Insane.*——STATED MEETING OF FEBRUARY 4, 1878: Presentation of drawings by Dr. N. B. Emerson, illustrating the changes of cervical and cerebral *pachymeningitis*, exhibition of *sections through the entire brain* prepared by Dr. Gudden, by Dr. Denny, of Boston. A Paper of the joint authorship of Drs. E. C. Seguin, Vanderveer, of Albany, and J. C. Shaw, entitled *Contribution to the Pathological Anatomy of Disseminated Cerebro-spinal Sclerosis*, was read by the last named.——STATED MEETING OF MARCH 4, 1878: Paper entitled *Reform in Scientific Psychiatry*, by Dr. E. C. Spitzka. Also, presentation of a case of apparently *Functional Disturbance of the Cerebellum with Nystagmus*, by Dr. Wm. A. Hammond, and of the *brain of a Chimpanzee*, by Dr. E. C. Spitzka.——STATED MEETING OF APRIL 1, 1878: Presentation of sections from the spinal cord of a patient dying with *Progressive Muscular Atrophy*, by Dr. J. C. Shaw, and a Paper entitled *Digiti Mortui*, by Dr. T. A. McBride.——STATED MEETING OF MAY 6, 1878: Paper by Dr.

E. C. Seguin, entitled *Contribution to the Pathological Anatomy of Sclerosis of the Posterior Columns of the Spinal Cord*, supplemented by a written report of several cases of *locomotor ataxia*, by Dr. J. C. Shaw.——STATED MEETING OF JUNE 3, 1878: Exhibition of a patient with *Unilateral Facial Atrophy*, by Dr. Beverley Robinson. Presentation of a specimen of *tumor of the brain*, by Dr. L. C. Gray. Presentation of specimens of the *spinal cord of an Anencephalous Fœtus*, by Dr. E. C. Seguin.——STATED MEETING OF OCTOBER 7, 1878: Exhibition of a patient suffering from *Progressive Facial Atrophy*, by Dr. E. C. Seguin. Paper by Dr. E. C. Spitzka, entitled *Merits, Motives and Prospects of the Movement for Asylum Reform.*——STATED MEETING OF NOVEMBER 4, 1878: Paper by Dr. Wm. A. Hammond, entitled *Cerebral Symptoms from Impacted Crumen in the Ear.* Probably the most extensive discussion recorded in our annals followed its reading. There were also presented specimens from a case of *Abscess of the Brain*, by Dr. J. C. Shaw.——STATED MEETING OF DECEMBER 2, 1878: Paper by Dr. V. P. Gibney, entitled *Notes and Remarks on two Cases of Cervical Pachymeningitis*, and one by Dr. E. C. Seguin on *The Medicinal Treatment of Chronic Trigeminal Neuralgia.*——STATED MEETING OF JANUARY 6, 1879: Presentation of specimens illustrating *Myelitis of the Anterior Horns*, by Dr. J. C. Shaw. Paper by Dr. E. C. Spitzka, entitled *Organology of the Island of Reil;* another by Dr. G. M. Beard on the *Differential Diagnosis of Neurasthenia.*——STATED MEETING OF FEBRUARY 3, 1879: Exhibition of patient suffering from *Extensive Facial Spasm*, by Dr. V. P. Gibney. Presentation of specimens of a *Tumor of the Cerebellum*, by Dr. E. C. Seguin. Paper by Dr. J. G. Kiernan, on the *Use of Hydrate of Chloral in the Psychoses*, and one by Dr. L. C. Gray, on *The Tendon Reflex, its Prevalence and its Physiology*, which was extensively discussed.——STATED MEETING OF MARCH 3, 1879: Exhibition of a patient manifesting *athetoid movements* connected with central lesion, by Dr. E. C. Spitzka. Paper by Dr. E. C. Seguin, entitled *Paraplegia in Syphilitic Subjects;* report of *some cases* from the clinic of Dr. Hammond, by Dr. Wm. J. Morton.——STATED MEETING OF APRIL 7, 1879: Report of a case of *Neuritis Ascendens, with Secondary Changes in the Cord*, on behalf of Dr. L. Putzel, by Dr. Gibney; report of a case of *Aphasia, probably due to Thrombosis in the Speech Tract*, by Dr. M. P. Jacobi. Paper by Dr. R. W. Amidon, entitled *Some New Points in the Pathological Anatomy of Tetanus*, and another on *Mysophobia*, by Dr. Wm. A. Ham-

mond.——STATED MEETING OF MAY 5, 1879: Relation of a case of a *Singular Choreic Affection*, by Dr. Wm. A. Hammond; relation of another case of *Facial Paralysis* of doubtful nature, by Dr. E. C. Seguin.——STATED MEETING OF JUNE 2, 1879: Exhibition of a case of *Wind-Spasm*, by Dr. Wm. J. Morton; report of a case of *Brain Trouble, associated with Abscess of the Liver, and cured by Aspiration*, by Dr. Wm. A. Hammond; Paper by Dr. A. D. Rockwell, entitled *Functional Derangements, simulating Structural Disease of the Heart.*——STATED MEETING OF OCTOBER 6, 1879: Report of a case of *Multiple Syphiloma of the Brain*, by Dr. R. W. Amidon; paper by Dr. L. C. Gray, on *The Association of Aphasia, with the symptoms of so-called Spasmodic Spinal Paralysis*, and one by Dr. G. M. Beard, entitled "*Brief Remarks on the Study of Nervous Diseases in Europe.*" ——STATED MEETING OF NOVEMBER 3, 1879: Report of a case of *Myelitis of the Anterior Horns*, with sections, by Dr. J. C. Shaw; paper entitled *A Contribution to the Pathology of Acute Central Myelitis*, being the joint production of Drs. E. K. Henschel and the reader, Dr. E. C. Seguin.——STATED MEETING OF DECEMBER 2, 1879: Exhibition of the *Brain of a Porpoise*, with remarks on the Island of Reil, by Dr. E. C. Spitzka; paper by Dr. Newton M. Shaffer, entitled *The Hysterical Element in Orthopædic Surgery.*——STATED MEETING OF JANUARY 6, 1880: Report, entitled *The Answer of the New York Neurological Society to the Document known as the Report of the Senate Committee on Public Health.* Presented by the asylum committee, Drs. Wm. A. Hammond, Wm. J. Morton, E. C. Harwood, L. C. Gray, E. C. Spitzka and E. C. Seguin, through their chairman, Dr. T. A. McBride.——STATED MEETING OF FEBRUARY 3, 1880: Paper by Dr. E. C. Spitzka, entitled *The Retinal and Oculo-Motor Innervations, with a new Homologization of the Corpora Quadrigemina.*——STATED MEETING OF MARCH 2, 1880: Report of a case of *Progressive Facial Atrophy*, with specimens and photographs, by Dr. Wm. A. Hammond; paper on the *Coincidenee of Optic Neuritis and Acute Transverse Myelitis*, by Dr. E. C. Seguin.——STATED MEETING OF APRIL 6, 1880: Exhibition of specimens of *Myelitis of the Anterior Horns*, with localized sclerosis of the lateral and posterior columns, by Dr. J. C. Shaw; paper by Dr. M. P. Jacobi, on *Clonic Rotary Spasm.*——STATED MEETING OF MAY 4, 1880: Paper by Dr. Wm. A. Hammond, on *A New Method of Treating Neuralgia of the Testes.* Report of a case of *Abscess of the Left Frontal Lobe*,

by Dr. E. C. Seguin; paper entitled *Observations on the Insane Asylums of California and Nevada*, by Dr. W. R. Birdsall.—— STATED MEETING OF OCTOBER 5, 1880: Report on the *Maria Ottmer Homicide*, by Dr. E. C. Spitzka; paper on the *Therapeutic Uses of the Magnet*, by Dr. Wm. A. Hammond. *Suggestions on the Keeping of Records of Restraint in Lunatic Asylums*, by Dr. Wm. A. Hammond.——STATED MEETING OF NOVEMBER 5, 1880: Paper by Dr. E. C. Spitzka, entitled *Remarks on the Nomenclature of Certain Chronic Insanities* (Monomanias). —— STATED MEETING OF DECEMBER 7, 1880: Exhibition of a patient suffering from *Hysteria Major*, by Dr. E. C. Spitzka; paper by Dr. R. W. Amidon, entitled *Remarks on Cerebral Thermometry*. ——STATED MEETING OF JANUARY 4, 1881; Exhibition of a patient suffering from *Hemiplegia and Hemianæsthia*, improved by a single application of the magnet, by Dr. Wm. J. Morton; paper on *The Town of Gheel, in Belgium, and its Insane*, by Dr. Wm. J. Morton. Exhibition of a patient suffering from *Monomania with marked Facial Asymmetry* by Dr. E. C. Spitzka.—— STATED MEETING OF FEBRUARY 1, 1881: Paper on *A New Cortical Centre*, by Dr. Græme Hammond; also one by Dr. J. G. Kiernan, entitled *Psychoses produced by Rheumatism, Insolation, Traumatism and their relations.*——STATED MEETING OF MARCH 1, 1881: Paper entitled *Cases of Myelitis of the Anterior Horns in which the Abdominal Muscles were affected*, by Dr. Wm. R. Birdsall; demonstration of *Mesmeric Muscular Hyperexcitability*, by Dr. Wm. J. Morton; paper on the *Projection of the General Sensory Periphery*, with specimens, by Dr. E. C. Spitzka.——STATED MEETING OF APRIL 5, 1881: Paper by Dr. M. P. Jacobi, entitled *Notice of a Case of Microcephaly;* paper by Dr. L. C. Gray, entitled *A Case of Reduction of Dislocation of the Third Cervical Vertebrae after four months' duration.*——STATED MEETING OF MAY 3, 1881: Presentation of specimens illustrating the pathological anatomy of *Chorea in the Dog;* paper on a case of *Tumor of the Cranium*, the patient being exhibited by Dr. E. C. Seguin.—— STATED MEETING OF OCTOBER 4, 1881: Paper on some of the *Therapeutical Uses of Nitro-Glycerine*, by Dr. Wm. A. Hammond ——STATED MEETING OF NOVEMBER 1, 1881: Paper on the *Question of Reflex Disturbances from Genital Irritation*, by Dr. L. C. Gray.——STATED MEETING OF DECEMBER 6, 1881: Paper by Dr. V. P. Gibney, entitled *Intermittent Paralysis of Malarial Origin*. ——STATED MEETING OF JANUARY 3, 1882: Paper by Dr. E. C. Seguin on the curative influence of *Iodide of Potassium in non-*

syphilitic nervous affections.——STATED MEETING OF FEBRUARY 7, 1882: Paper entitled *A Contribution to the Subject of Nerve Stretching*, with exhibition of a patient suffering from spastic spinal paralysis, improved by the operation, by Dr. Wm. J. Morton.——STATED MEETING OF MARCH 8, 1882: Paper by Dr. W. R. Birdsall, entitled *Contribution to the Pathological Anatomy of Lead Parlaysis.*

It will be seen from this record that the members of this society, if they would uphold its prestige, cannot afford to be idle. In my efforts to render the coming year as fruitful in results as its predecessors, I trust to have the support of every earnest friend of this body.

After the conclusion of this address, Dr. McBride moved that a committee of three be appointed to draw up a revised Constitution and By-Laws in harmony with the act of incorporation. This motion was carried unanimously and the Chair appointed Drs. Wm. A. Hammond, T. A. McBride and J. H. H. Burge a committee in accordance with the motion.

The Society then adjourned, at half-past ten o'clock.

Seventy-eighth meeting of June 6, 1882.

A regular meeting of the New York Neurological Society was held in the lesser hall of the Academy of Medicine, 12 West 23d street, on June 6, 1882, at a quarter past eight, the President, Dr. E. C. Spitzka, occupying the chair. The minutes of the previous meeting being read, it was moved and seconded that they be accepted as read. The motion was carried. Dr. Seguin rose and stated that the protest which was entered on the minutes had not been read as it should have been. The Secretary replied that he had intended to paste the original document in the minute book, but had not yet done so; the minutes, however, contained a reference to the protest, which he had not with him. Dr. Seguin said he could supply the deficiency, as he had a copy with him, and drew one from his pocket, which he handed the Secretary. Dr. Wm. A. Hammond said that lengthy documents were not ordinarily read in full, and such a reference as the minutes contained was ample. Dr. Dwinelle, who entered late, said that he was against any suppressions of the minutes. The Chair reminded him that his remarks had no basis, and that if he had been present he would have known that the protest was referred to and its general contents stated; the question before the house

was whether the whole document should be read. Dr. Dwinelle withdrew his statement, and said that he himself would not favor that project. Dr. Hammond moved that the reading of the protest be suspended. The President ruled this motion out of order, as no part of the minutes, but only the whole minutes could have their reading dispensed with. Dr. Hammond appealed against this decision, and the vote taken on the appeal yielded the following result: 8 voted to uphold the chair, 6 against the chair, and its ruling was sustained. Dr. Hammond declared that he would not remain in the room while the document under consideration was read. The President then read the copy of the protest, furnished by Dr. Seguin, in full, with its appended list of signatures.

Dr. McBride, at this juncture, gave formal notice that at some future meeting he intended to move the expunging of the protest from the minutes.

The Secretary then read the report of the Council recommending Drs. Brill, Osborne, Muzzy, Berg and Adam for membership. They also recommended the acceptance of Dr. Abram Jacobi's resignation. To these recommendations the Society acceded unanimously. The name of Dr. H. H. Kane was then brought forward for election, and the Secretary being directed to cast a vote in his favor by a unanimous vote of the Society, did so, and Dr. Kane was duly declared a regular member.

Dr. Græme M. Hammond exhibited two patients, sisters, both suffering from a nervous affection. The first he regarded as a case of progressive muscular atrophy, and gave the following synopsis of her case:

Miss G., æt. 22, German. About two years ago began to feel fatigue in the muscles of throat and tongue in speaking and eating. Came to Metropolitan Throat Hospital eighteen months ago to have throat attended to. Was referred to Department for Nervous Diseases. Found complete paralysis of uvula, lips pouting, eyeballs protruding, could not swallow well, could only speak for a few moments, could not whistle. Treatment consisted in static electricity to uvula, tongue and muscles of face and throat; also faradism. Internal administration of strychnia for three months only. Seven months ago complained of weakness of arms and legs. Articles would drop from hands; has fallen down from weakness of legs. Muscular contractility not impaired under electrical stimulus. Has improved under static and faradic electricity. Dr. Gibney stated he had once had a similar case.

Dr. Hammond thought it resembled more a case of glosso-labio-laryngeal paralysis when he first saw it, but now thought he could detect evidences of the ***main-en-griffe***. Dr. Seguin said that he had had a case similar to this one, in which he suspected hysteria, and referred to the fact that genuine progressive muscular atrophy was rare in such young persons. The second patient, as stated, or sister of the other, aged 20, began to feel languid and tired a year ago, and at the same time her skin began to show a bronzed hue. She has pain in the back and over the hepatic region, and diarrhœa alternating with constipation often, also pains in the joints. Recently her mental condition has changed: she is cross and irritable, the brown stains are very deep in the mouth, around the nipples and the vulva. Brief remarks were made on this case by Drs. Wm. Hammond, Seguin and Amidon.

Dr. N. E. Brill then read an account of a case of focal hemispheral lesion with color-blindness.[1] Dr. Herman Knapp, being called on to discuss the paper by the President, stated that the omission to make a perimetric registration of the color-field rendered the case almost valueless. He could not account for the symptom for this reason, nor did he believe any conclusions could be drawn. This was to be regretted, owing to the fact that an accurate ***post-mortem*** record was not available. Cases of partial color-blindness had been reported by Samelsohn and others without autopsies.

The President remarked that the fact that no limitation of the visual field had been found seemed to dispose of the necessity of making a perimetric registration of the color-fields, and that, therefore, conclusions drawn from this case were justifiable. A case showing any kind of color sense disturbance, well established during life, and with a focal hemispheral lesion, was unique. The patient was so stupid that he doubted whether a perimetric registration of the color-fields could have been carried out by any one less an expert than Dr. Knapp. He inquired whether in Samelsohn's case such test had been made. To this Dr. Knapp replied affirmatively.

The paper of the evening, entitled "Carotid Compression and Physiological Brain-Rest," was then read by its author, Dr. James Leonard Corning, who stated substantially the following:

"About one year ago, considerations of an anatomical and physiological character induced me to begin a series of experi-

[1] See original department of this number.

mental investigations, with the object of elucidating certain phenomena, observable in epileptics, which point to a deranged condition of the cerebral circulation.

"The extraordinary venous hyperæmia, as well as the violent pulsations of the carotids, which these patients exhibit during the attacks, awakened in me the suspicion that there is some consequence between the sanguineous engorgement and the persistent continuance of the 'attack.'

"It did not occur to me, however, to perceive in this engorgement the *inceptive* motive of the attack; indeed, the striking pallor which epileptics exhibit immediately prior to the seizure would appear to afford sufficient proof that the attack is primarily owing to the irritative influences of excessive anæmia. But admitting all this to be true, it would, nevertheless, seem necessary, after the cessation of the anæmia, to look elsewhere for those causes most intimately concerned in the further continuance of the seizure. As above intimated, the most striking phenomena which present themselves, after subsidence of the first condition of anæmia, are the excessive venous hyperæmia and the throbbing of the carotids. I therefore determined, before perceiving in more occult forces a reason for the continuance of the attack, to allay artificially the condition of cerebral engorgement and to await the result. With this end in view, I compressed digitally both common carotid arteries of an epileptic who had just entered upon a series of violent paroxysms, the usual duration of the status epilepticus, in this case, being from thirty to forty-five minutes. In about five minutes the convulsions were completely checked, and the patient remained in a perfect state of consciousness. The rapidity with which fulness developed in the radial pulse on compression of the carotids was most striking. Noteworthy also was the concomitant return of consciousness and cessation of convulsions with the increase in strength of the radial pulse. At this time I was totally unaware of the achievements of Parry, in 1792, with digital compression, and my experiments were undertaken as the result of deductive reasoning from purely anatomical and physiological premises.

"After having essayed digital compression on several subsequent occasions, and having repeatedly convinced myself of its efficacy as a means of aborting epileptic attacks, I became unhappily aware that in certain very violent paroxysms it is impossible to exert the necessary pressure upon the arteries with the fingers, owing to the excessive spasm of the cervical muscles. I must

confess that for some time I was in considerable doubt as to how this obstacle was to be overcome; but finally, as good fortune would have it, I hit upon the expedient of constructing an instrument which enables the operator to exert his strength to the best possible advantage, while admitting of a far more accurate adjustment than can possibly be obtained by the use of simple digital compression. The chief features of this instrument are two curved metallic armatures, to each of whose extremities is attached a pad, which by means of a screw, provided with a detacha-

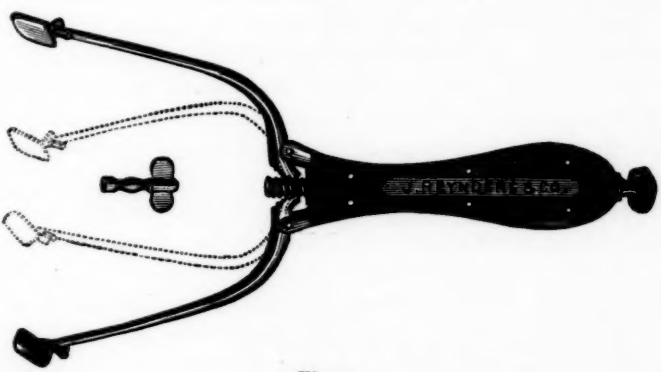


Fig. 1.

ble key, can be placed at any desired angle. The object of this latter device is to permit of so arranging the pads that the artery is compressed *away* from the jugular vein, and in the direction of the spinal column. The other extremities of the curved armatures are attached to a handle by means of an Archimedian screw, which transfixes the latter in its entire length. By rotating the button which is attached to the disengaged end of the screw the curved armatures can be extended or approximated at will.

"Digital compression of the carotids has been found of the greatest utility in a very large variety of convulsions. It has been essayed during the convulsions peculiar to epilepsy, hysteria and acute meningitis, but I am not aware that its effects on the spasmodic conditions peculiar to hydrophobia have ever been ascertained. My own experience with compression is confined more particularly to epilepsy, maniacal excitement, and congestive headache. Those authors, however, who have resorted to it in various other convulsive disorders speak of its efficacy in the highest terms; and certainly statistics on this subject would be most valuable.

"The method of employing the instrument devised for temporary compression is quite simple, and I have found it vastly superior to the primitive procedure of digital compression. Having placed the patient upon a bed, in a horizontal and semi-dorsal position, the head and shoulders being supported with properly adjusted cushions, the operator takes his position by the bedside, in such a manner that his left side is turned toward the bed, and his view directed toward the face of the person requiring assistance. Then having with the index finger of the right hand ascertained by careful exploration the exact position of the arteries, the operator proceeds, accurately adjusting the armatures of the instrument, in such wise that the pads, which have previously been turned somewhat inward, and fixed by means of the key, will, when brought into position over the arteries, press the latter *away* from the pneumogastric nerve and jugular vein in the direction of the spinal column.

"In exerting compression, the instrument should be held in the right hand, the handle of the same forming a perpendicular to the arteries. With the left hand pressed firmly against the superior portion of the neck, the operator exerts the necessary counter pressure, and at the same time contributes to the support of the head in the desired position. To be effectual, such pressure must be considerable—very much more so than in prolonged compression. Compression should, however, never be carried to such an extent as to cause entire closure of the lumina of both arteries; such a procedure may cause convulsions, should the anastomotic facilities in the Circle of Willis be inadequate to meet the unwonted physiological exigencies. This contingency, however, is not liable to occur, as the degree of pulsation in the temporal arteries affords reliable information as to the extent of the circulatory obstruction. While temporary compression was thus easily produced, the more important procedure of securing more or less permanent compression remained a problem. It was only

Fig. 2.

after repeated and discouraging trials that I finally succeeded in devising a species of truss, which, while being simple and inex-

pensive in construction, seems to fulfill both the theoretic and practical demands of the problem in every respect. This carotid truss consists of two semi-circular springs, one of which is provided with a longitudinal slot. Through this slot passes a screw, that is securely imbedded in the periphery of the second spring which lies directly below and in perfect apposition with the first. By sliding one over the other the radius formed by the two springs may be increased or diminished at will; while by tightening a nut, with which the screw is provided, they may be held in any desired position. To each of the free extremities of the springs is attached, by means of a ball and socket-joint, a delicate pad. The ball of this joint is attached to a screw, which can be lengthened or shortened at will. The pads can be moved to and fro by means of a short longitudinal slot, and secured in position with a screw.

Fig. 3.

"The mode of applying this instrument is as follows: Having first, by means of the radial screw, which provides a *coarse* adjustment, adapted the radius of the truss to the circumference of the neck of the patient whose arteries are to be compressed, the operator next proceeds to adapt the pads to the arteries, by means of the smaller anterior slots and screws, which afford a *fine* adjustment. The region of the artery to be selected for permanent compression is precisely the same as that to be chosen in temporary compression. The pads should be so arranged, namely, that their superior margin is situated about opposite the juncture of the thyroid with the cricoid cartilage. Connection may be established between the extremities of the truss by means of an elastic band, secured at each extremity by detachable clamps. This elastic band is provided with a buckle. By lengthening or shortening the band pressure can be increased or decreased at will. Protracted pressure should never be so great as to cause serious

inconvenience or giddiness. On the other hand it must be sufficient to sensibly diminish the lumen of the artery, otherwise no good will be likely to result from the procedure. More difficulty is experienced in the adjusting of instruments to the necks of fleshy persons than to those of less full habit. Prolonged compression is furthermore not usually so well borne by these fleshy patients, as in order to act upon the lumen of the artery through the superincumbent adipose tissue, considerable pressure must be employed, and this they find it hard to reconcile themselves to for very considerable periods of time. In most cases, however, with the employment of proper dexterity and tact, patients are very glad to wear apparatus of this kind for very long periods of time. This is all the more readily accomplished when they become aware that a high loose collar effectually conceals the truss from the gaze of the inquisitive. With this and similar instruments I have compressed for more or less protracted periods the carotid arteries of a number of epileptics. Although some of these patients were subject to as many as three or four attacks every twenty-four hours at the time I began treatment by protracted compression, I was enabled to arrest the convulsions entirely for the space of many days—indeed in some instances for several weeks. Nor did these good effects disappear directly on cessation of compression ; on the contrary, the attacks were less frequent for a considerable time after removal of the instrument. Remarkable was the effect of compression on the peripheral circulation. In some of the cases in which I essayed compression, the disordered state of the vaso-motor mechanism was most manifestly displayed in the cold and cyanotic condition of the extremities. After applying compression for a certain length of time in these cases, the venous stasis was replaced by a healthy glow, and the condition of frigidity was replaced by one of actual warmth. These facts are certainly significant, for I can only attribute the above effects to the direct or indirect beneficial influence of compression on the vaso-motor centres.

"Certainly the amount of blood excluded from the brain by compression, and consequently directed to other corporeal regions, would of itself hardly account for the peripheral effects. We must rather, I believe, ascribe these beneficial results to the benignant action of compression on the cerebral centres themselves.

" Having noted the efficacy of compression in epilepsy, it became a question with me whether the procedure might not prove of value as a somniferous agent in maniacal excitement, where, as is

well known, there is often a considerable degree of cerebral hyperæmia. Accordingly I compressed the carotids of a patient who was suffering from a protracted and most violent attack of mania. He had slept but little for weeks, although taking large doses of hyoscyamus and chloral. This patient was violent and destructive, tearing and breaking everything within his reach. To adjust apparatus to this man's neck I was obliged to have him restrained by a number of attendants; his mental and motor excitement were something frightful to contemplate. His face was much distorted and flushed, and both conjunctivæ much injected. I applied compression to his arteries while he remained in a sitting posture. After the lapse of a few moments, his cries and struggles ceased, his eyelids drooped, and he began to oscillate to and fro upon his chair. In this condition he suffered himself to be led to his bed. There he remained quietly upon his back, evincing all the symptoms of drowsiness. In a shorter time than it takes to relate it, he was wrapt in slumber. This repose had all the characteristics of physiological sleep. Respiration was deep and perfectly regular. There was not the slightest cardiac irregularity or disturbance whatever. Patient continued to sleep for several hours, and when at last he awoke, appeared much refreshed. I have since employed compression many times with the object of placing the brain in a condition favorable to sleep, and with an eye to limiting the amount of ganglionic activity.

"I can only say that I am astounded that a method which, for theoretic reasons, must commend itself to every thoughtful understanding, should, for so long a time, have deluded the progressive inquest of the profession.

"The phenomena observable on augmenting more or less rapidly pressure upon the carotids are substantially as follows: (*a.*) Facial pallor; (*b.*) Drooping of the eyelid; (*c.*) Decrease in rapidity of respiration; (*d.*) Dizziness and frequently well-marked soporific tendency; (*e.*) In very anæmic persons frequently syncope.

"The propriety of employing compression in those functional troubles described under the term 'Neurasthenia,' is self-evident. Derangement of cerebral circulation is one of the most common phenomena in these disorders, and attention has been called to the morbid condition of the vaso-motor centres, evidenced in the extraordinary facial flushings often present in these cases. Passive congestions of the nerve-centres, especially transient hyperæmias of the brain, are among the most frequent results of neurasthenia.

When the intimate relationship which congestive phenomena sustain to epilepsy, hysteria and other neuroses is borne in mind, and when we consider the profound circulatory derangements which are so prominent a feature in these grave diseases, the necessity of treating all *early* morbid circulatory derangements, before they result in profound organic changes, is evident.

"In concluding this paper I cannot refrain from a reference to Dr. William A. Hammond's remarkable case, which so graphically and conclusively proves that the brain is in a comparative state of anæmia during sleep. The case in question is published in Dr. Hammond's classical work on 'Sleep and its Derangements,' page thirty-seven. 'In 1854 a man came under my observation who had, through a frightful railroad accident, lost about eighteen square inches of his skull. There was thus a fissure of his cranium three inches wide and six inches long. The lost portion consisted of a great part of the left parietal, and a part of the frontal, occipital, and right parietal bones. The man, who was employed as a wood-chopper, was subject to severe and frequent epileptic fits, during which I often attended him. In the course of my treatment I soon became acquainted with the fact that, at the beginning of the comatose condition which succeeded the fits, there was invariably an elevation of that portion of the scalp covering the deficiency in the cranium. As the stupor passed away, and sleep, from which he could easily be aroused, ensued, the scalp gradually became depressed. When the man was awake, the region of the scalp in question was nearly on a level with the upper surface of the cranial bones. I also noticed, on several occasions, that during natural sleep the fissure was deeper, and that in the instant of awaking the scalp covering it rose to a much higher level.'

"Dr. Hammond also refers to the published paper of Dr. Flemming, late Professor of Medicine, Queen's College, Cork, in which that able observer states that he has frequently succeeded in producing sleep by compression on the carotids."

Several of the instruments described in the paper were passed about among the audience, and Dr. Corning illustrated their mode of application on the living subject.

Dr. Wm. Hammond, being called on to discuss the subject, stated that a young physician in Buffalo, years ago, arrested the epileptic paroxysm by putting cords around the neck, thus compressing the jugular veins. This he had done on a theory diametrically opposed to that advanced by Dr. Corning, and evident-

ly he had produced a different effect from that ensured by Dr. Corning's device.

Dr. J. C. Peters thought that a partial spasm of the cerebral vessels was less likely than a general one in the case of epilepsy.

Dr. L. C. Gray believed that this assumption of vaso-motor changes being the causes of epilepsy and other functional nervous disturbances was to be placed among the fairy tales of science. There was not only no proof of it, but the carefully conducted experiments of Vulpian, probably the most judicial of all living physiologists, directly disproved it, for he had ascertained that Guinea pigs, made epileptic after the method of Brown-Sequard, displayed sometimes slight cerebral hyperæmia, sometimes slight ischæmia, more often no vascular change whatever. It is much more in consonance with all known facts to believe that the convulsions and spasms of peripheral vessels are the results of violent cellular changes in nerve-cells. That Kussmaul and Tenner produced epilepsy by cutting off the intra-cranial supply of blood through the carotids is no more a proof of epilepsy being *always* due to anæmia than it would be to assume that because a blow on the head produced epilepsy, therefore epilepsy was *always* caused by a blow on the head.

Dr. M. Josiah Roberts stated that he had become somewhat familiar with Dr. Corning's ideas through repeated conversations with him, and had made use of digital and instrumental temporary compression of the carotids in a number of instances. His first patient was one who had been suffering severely from an intense throbbing headache for more than seven hours. Her face was flushed, conjunctiva injected, and tears stood in her eyes. It was, in fact, a very severe case of congestive headache. With one of Dr. Corning's earlier instruments he made firm pressure over both carotid arteries for forty-five seconds, when the patient declared her headache had entirely ceased. One week later she reported that there had been no re-occurrence of the trouble.

The next case in which he tried it, was one of old-fashioned tic douleureux of six years' standing. He firmly compressed both carotids for more than ten minutes, but without the slightest amelioration of pain. He had also used instrumental compression in epistaxis when occurring idiopathically and in consequence of surgical operations upon the anterior nares, and with the happiest results. He expressed the opinion that prolonged instrumental compression might be serviceable in combating

acute inflammations, not only of the meninges, but of the ear, and nasal passages.

On one occasion when suffering from a severe congestive throat-ache, Dr. Roberts applied to his own neck a Corning's carotid truss, and used it in conjunction with a hot foot bath. At the expiration of about ten minutes the pain in his head had nearly abated. Feeling drowsy, he removed the truss, laid it by his pillow and fell asleep. In the morning he awoke refreshed and without a head symptom.

Dr. Roberts had used digital compression of the carotids as an adjuvant to ætherization in twelve cases. It appeared to hasten the process; he could not say whether less ether was required. Forcible compression of the carotids was of undoubted service in quieting the patient during the stage of excitement. For euthanasia Dr. Roberts had made use of digital compression of the carotids in one instance.

Dr. Corning formally closed the discussion, and miscellaneous business being in order, Dr. Wm. Hammond reported that the Committee on Constitution and By-Laws could not act without legal advice, inasmuch as there was a grave question as to the power of the Trustees. He had already consulted a lawyer and would make a report at the next meeting.

Dr. Seguin wished to know whether the Council were not the proper authority to refer the question to. The President informed Dr. Seguin that at the previous meeting a motion to appoint a committee had been made and unanimously carried, and that he had appointed such a committee. Dr. McBride suggested that the question stood with the committee at present, what should be done with its report was an ulterior consideration. The President suggested that a special meeting could be called for the particular objects hinted at, and the Society adjourned at eleven o'clock.

QUARTERLY REPORT ON PROGRESS IN NEUROLOGY.

ANATOMICAL CONTRIBUTIONS.

1. A. Milnes **Marshall.** Tegmental Value of Cranial Nerves. Jour. Anat. and Physiol., April, 1882., p. 305.

1. Since the days of Oken and the transcendental anatomists there has been much discussion relative to the homologies of the skull; but the questions which have given rise to so much speculation are only now beginning to receive their true solution through the light shed upon them by embryology. In the exceedingly interesting and valuable paper referred to above, Professor Marshall gives a clear statement of the present aspect of the question, whether the cranial nerves are directly comparable to the spinal, and the number of spinal nerves to which they are equivalent.

After a brief allusion to the theory of the older anatomists, who first determined the number of cranial vertebræ, and then deduced therefrom the number of the cranial nerves, he draws attention to Gegenbauer's announcement, in 1871, that the reverse method is capable of throwing more light on the subject, viz., to first determine, by embryology and comparative anatomy, the number of true segmental nerves, and these will, of course, correspond to the vertebræ.

Stannius had already pointed out the distribution of the nerves to the visceral arches, and suggested that the pneumogastric might represent more than one nerve, as it was distributed to three arches. The author gives Stannius full credit as being the one who first clearly pointed out the relations of the ventral branches of these nerves to the visceral arches, and for recognizing the segmental value of the fifth, seventh, ninth and tenth nerves.[1] The most important of the investigations which followed are those of Balfour on the development of the elasmo-branches, showing the

[1]Stannius, Das peripherische Nervensystem der Fische. Rostock, 1849.

epiblastic origin of both the spinal and cranial nerves, and the peculiarities of development of the posterior roots. Reference is also made to B.'s further researches on the head cavities and associated nerves of elasmo-branches, which have been applied by Marshall and others to birds and mammals.

The evidences of true segmental or metameric character are then given as follows:

"1. Segmental nerves develop at a very early stage, as outgrowths from the neural ridge, on the dorsal surface of the brain.

"2. At an early period they shift downwards, and acquire new or secondary roots of attachment to the sides of the brain.

"3. The general course of the main stem of a segmental nerve is at right angles, or nearly so, to the axis of the head at the point of origin of the nerve. This feature * * is evident * * *1 from the consideration that the course of segmental nerves must be approximately parallel to the boundaries of the segments to which they belong; a segmental nerve could not run transversely across a number of segments.

"4. Segmental nerves have the characteristic relations to the visceral clefts and arches, and therefore, also to the head-cavities in those arches first pointed out by Stannius, as noted above, each nerve supplying the borders of one cleft, and, therefore, of two arches. Concerning this test it may be noted that although from the constancy of the relations of the visceral clefts to other structures in all vertebrates above *Amphiôxus*, there can be no doubt that Gegenbauer, Huxley, Semper and others are correct in maintaining the segmental value of these clefts; yet that the total absence of any correspondence between the visceral clefts and the body segments in *Amphiôxus*, and still more in the Ascidians, makes it very doubtful whether this segmental character is a primitive one.

"5. Segmental nerves very constantly present ganglionic enlargements, either at or near their points of division into their two main ventral branches."

He then takes up the cranial nerves and discusses their individual claims to rank among those which mark off distinct sections of the body. We have not space to more than briefly notice his treatment of this part of the subject, and to give the final conclusions:

1. The olfactory. Marshall classes this with the segmental nerves, as it answers to the tests pretty completely. The points

in which it fails are, as he justly remarks, those which have not yet received thorough investigation. Thus, though it has been ascertained that the first is of very early origin, springing from the fore-brain before the hemispheres are developed, and being pushed down and covered by them, yet it is not yet known to arise from the neural crest, or to undergo the typical downward displacement. As to its supplying a visceral cleft, he refers to his own observations on the olfactory organs of the chick, in which he has endeavored to show that that organ is the most anterior visceral cleft, the schneiderian plications being homologous to the gill folds.

2. He admits at once the non-segmental character of the optic.

3. The "eye-muscle nerves," third, fourth and sixth, are then considered, the objections that have been raised to their being classed as separate nerves are discussed, and the writer finally concludes as follows:

"(*a*) That in no single instance has it been established that any one of the eye-muscle nerves is replaced by a branch of the fifth or any other nerve, the cases in which this is alleged to occur being far more naturally explained by supposing partial fusion between the nerves concerned to have occurred.

"(*b*) That in the alleged cases of replacement of one or more of the eye muscle nerves, the 'branch of the fifth' in question is very probably the *ramus ophthalmicus profundus*, which is really a communicating nerve between the third and fifth, belonging as much to one as to the other in its posterior portion, and in its anterior part belonging exclusively to the third.

"(*c*) That the instances in which the absence of one or other of the eye-muscle nerves has been alleged are either, as in *Petromyzon*, *Lepidosteus Pipa*, *Hyla*, etc., cases in which the nerves in question arise from the brain in a perfectly normal manner, and after running a certain distance within the skull become connected more or less intimately with the fifth nerve; or else cases in which, as in *Lepidosiren*, the eyes are small, the eye-muscles imperfectly developed, and the descriptions of their anatomy incomplete and unsatisfactory.

"(*d*) That such cases do not in any way invalidate the proposition that the third, fourth and sixth are independent nerves throughout the vertebrate sub-kingdom."

Then applying his tests to them separately, he concludes that the *third* is a segmental nerve, the *fourth* a part of the third; the

fifth segmental; the sixth *not*, "as it distinctly fails to answer to any one of the tests of such rank." He is inclined to group it with the seventh, and to regard it as "having the same relation to the seventh that the anterior root of a spinal nerve has to its posterior root."

The seventh is undoubtedly of segmental value. The eighth has apparently no claim to such rank. The glossopharyngeal and pneumogastric are the most evident of all, and were the ones to which particular attention was called by Stannius and Gegenbauer. The only question in the case of the tenth is as to the number of segments it represents. The greatest number of clefts supplied by it is six, in the *Marsipobranchii* and Notidanus, so that it "must therefore be equivalent to *at least* six segmental nerves."

Neither the eleventh or twelfth cranial nerve is constant, and their value is, therefore, doubtful. Prof. Marshall informs us that he is at present engaged in studying their development, so that we may expect something further from him on the subject. There is appended to this most valuable paper a good bibliographical list and a series of figures illustrative of the points which the author discusses. A diagram of a sagittal section of a vertebrate fœtus gives a clear idea of the relations of the segmental nerves to the visceral clefts and arches. It is of particular value as showing the distribution of the pneumogastric, by separate trunks, to the adjacent sides of three clefts.

PHYSIOLOGICAL OBSERVATIONS.

1. Prof. Dr. Sigmund **Meyer,** of Prague. Ueber Vorgänge der Degeneration und Regeneration im unversehrten peripherischen Nervensystem. Eine biologische Studie (Upon Processes of Degeneration and Regeneration in the Uninjured Peripheral Nervous System). Zeitschr. f. Heilkunde. II. Bd. 2, ü. 3, Hft. S. 154.—**2.** Prof. Dr. A. **Eulenburg.** Ueber einige Reflexe im Kindesalter. (Upon Certain Reflexes in Childhood). Neurol. Centrlbltt. 15 April, 1882.

1. This is without question one of the original works of the age. It opens to our view a set of phenomena in the normal nerve of which we had never dreamt. Just as changes of degeneration and regeneration go on in a severed nerve—the *entartungsprocess* of our Teutonic colleagues—just in the same manner go on, our author claims, changes of degeneration and regeneration in

a perfectly healthy nerve, as a natural accompaniment of health. Prof. Meyer proves, we think, that in the peripheral nervous system of the vertebrata medullary nerve-fibres are constantly disappearing, to return later, in part at least, to their normal condition. To use his own language, "There is occurring, in other words, in the peripheral nervous system, a constant change of form; the medullary nerve-fibres are not stable formations, but they are each and all subject, in the course of their common life, to deep-seated alterations of their structure and chemical nature, so that they possess in their normal relations not only a perennial but also a cyclical duration of life."

The degenerative changes which ensue in nerves after section or disease implicate the sheath of Schwann, as well as the medullary sheath and the axis-cylinder; but in the degeneration observed in normal nerve the sheath of Schwann is not involved. The author divides this normal degeneration into stages, as follows:

I.—First stage—The sheath of Schwann is filled by contents not quite normal, but so that the sheath is essentially filled out still to normal dimensions.

II.—Second stage—The contents of the sheath of Schwann are of abnormal constitution, but have deviated from the normal in varying degree in the different portions of the nerve-fibre. Those places in the nerve-fibre at which the alteration is in the first stage, or nearly in the first stage, have nearly or quite retained their normal dimensions. In other places, however, the progressing alteration has led to the partial disappearance of the abnormal contents from the sheath of Schwann, so that the latter is more or less collapsed. In this manner the nerve-fibre presents, at this stage, a continual change of dimensions in its course.

III.—Third stage—The nerve-fibre is so altered, that it is nowhere completely filled out by the abnormal contents; still, in many places the altered contents of the sheath of Schwann are collected into considerable masses.

IV.—Fourth stage—The nerve-fibre has so gotten rid of the abnormal appearances which were so distinct in the former stages, that it is difficult to distinguish in it traces of its development from a normal medullated fibre. These traces, which are described later, are seen in places disconnectedly in the course of the nerve, but are always much less in dimension than those altered contents of the sheath of Schwann, which appear in the third stage.

The different stages are then described in more detail.

In the first stage, the medullary sheath is broken up, and this differently from what are known in Germany as the "Schmidt-Lantermannschen Einschnürungen," and in this country and France as the "constrictions of Ranvier." The forms thus assumed are manifold, and the more advanced the stage, the more the separate fragments assume the globular shape. The nerve-fibres assume a more strongly glittering appearance than is normal, resembling the optical appearance of fat-cells. Attention to this circumstance will render easy the discovery of degenerate fibres in the first stage.

In the second and third stages, the normal medullary layer is wanting; in place of it are fragments of the most varied forms, and with the physical and chemical characters very closely resembling fat. All these derivatives of the medullary layer are imbedded in a finely granular mass that is strewn with numerous dark granules and minute fat globules. Where these contents are found, the fibre is of normal dimensions, and in places the size is abnormally large. If such a fibre be followed up, it is seen to grow smaller, and its contents, hitherto fat-like and distinctly refractile, disappear. The fibre then pursues its course with pale, finely granular contents and many nuclei, probably to run into another enlargement such as that just described.

In the fourth stage, the altered fibres are by no means so easily found.

(*a.*) There are intermediate forms of fibres between those of the fourth and other stages, and they are distinguished by slight enlargements, consisting either of the finely granular substance of which the rest of the fibre is composed, or within them are distinct remains of degenerated medullary substance.

(*b.*) The dark, refractile granules and the minute fat-globules, which are imbedded in the finely granular contents of the fibres appear just as in the earlier stages, so that a little practice enables one to recognize them readily.

Our author then proceeds to describe the process of regeneration:

1. By far the most important sign for the ready and safe recognition of the regenerative forms is to be found in the fact that the old altered fibres persist in places for a long time.

2. The regenerative processes affect small lengths of the nerve, just as the degenerative changes did. A fragment thus interposed between unaltered portions is distinguishable, aside from the regenerative appearances, often if not always present, by its being

considerably less wide than any non-degenerate fibre, by its being separated from this unaltered fibre by constrictions like those of Ranvier, and by its medullary layer being very thin, to which seems mainly to be due the reduction in calibre.

3. Numerous small, young fibres are found in the sheaths of Schwann, with or without medullary layer.

We have merely outlined the minute details which add to the intrinsic value of this paper. Every neurologist should keep a copy of it by the side of his microscope, and no histology of the nervous system could be complete without it.

2. The writer first makes a cursory reference to his article upon tendon-reflexes in children, published in the Deutsche Zeitschr, f prakt. Medicin. 1878, Nr. 31. In this he demonstrated that the tendon-reflex was present immediately after birth, and often became weaker as life advanced. It was absent in 4.21 per cent. of cases. In the present paper, Dr. Eulenburg claims that he has again gone over the subject, and is confirmed in his previous statement about the relative infrequency of this sign in children. The tendon-achilles-reflex was wanting in 81.45 per cent. The so-called "bone-reflexes" (tibial and radial) were absent, tibial in 87.1 per cent.; radial in 87.6 per cent. On the other hand, the cutaneous and mucous reflexes, such as those of the belly, nostrils, cornea, pupils, were not missed in a single case. The aural reflex, which is, however, difficult to ascertain in children, was lacking in 4.03 per cent.

The cremaster-reflex was examined in 78 boys; in 25.64 per cent. it was either wanting or not distinct.

A table is then given of the different ages of childhood at which these various reflexes are found.

Some investigations of Dr. Haase, undertaken at the writer's suggestion, are then spoken of. They relate to the reflexes during the fevers of childhood, such as typhoid gastroenteritis, scarlatina, croupous pneumonia, epidemic cerebro-spinal meningitis, with temperature up to 40.6 C. No constant results were obtained. In a girl of 16, with epidemic cerebro-spinal meningitis, the tendon-reflex of the knee disappeared on one side at the height of the fever, but returned with the febrile subsidence.

PATHO-ANATOMICAL CONTRIBUTIONS.

1. Mr. **Eve.** Endothelial Tumor of the Brain. Also, Calcareous Tumor of Same Organ. London Lancet, April 22d, 1882, pp. 646.—**2.** E. G. **Loring,** M. D. A New Nervous Connection between Intra-Cranial Disease and Choked Disk. N. Y. Med. Journal, June, 1882.—**3.** Prof. **Huguenin,** in Zürich. Contributions to the Study of Meningitis (Zur Casuistik der Meningitiden). Corr. Bl. f. Schweizer-Aerzte, 1882, Nr. 4 and 5.—**4.** George L. **Peabody,** M. D. Primary Sarcoma of Brain. N. Y. Med. Record, April 8th, 1882,—**5.** Dr. C. **Friedländer.** On Calcification of the Ganglion Cells. (Ueber Verkalkung der Ganglienzellen). Virch. Arch. LXXXVIII., I. S. 84–91.—**6.** J. **Bokai.** Ein Fall von Meningitis Basilaris non-Tuberculosa. (A Case of non-Tuberculous Basilar Meningitis.) Jahrb. f. Kinderk. 1882, XVIII., I.

1. Man, *æt.* 30. Suffered from cerebral symptoms for three years. Death in coma. This is all the clinical history given. Medullary tumor in superior and anterior portion of cerebellum, projecting forward into transverse fissure. Aqueduct of sylvius was obliterated. Microscopically tumor consisted largely of rounded papillæ of connective tissue, covered by a single layer of round endothelial cells, which in places formed a continuous lining to alveoli, or were massed irregularly in the connective tissue. Mr. Eve brought with him, from St. Bartholomew's Hospital, a portion of the brain of an elderly woman, containing many round small endothelial tumors, with a structure similar to the one he had shown. He supposed that in both cases the tumors originated in the endothelial lining of the inner surface of the pia mater, or from its prolongations around the vessels dipping into the brain. They resembled Billroth's villous or plexiform sarcomata of serous membranes, what Wagner describes as endothelial cancers. They were like the cancers in their cellular characters ; but, the membranes of the brain coming from mesoblast, they were theoretically sarcomata ; but the theory of all cancers originating from epiblast or hypoblast was so defective that Mr. Eve preferred to call them cancers. Mr. Eve also showed a calcareous tumor found in the brain of a young man, dead from apoplexy. It was walnut-sized, spiculated on the surface, was partly in posterior extremity of third ventricle and partly in a cavity in the left optic thalamus. It was attached be-

low by some fibrous tissue within the brain substance and traceable to the pia mater. The cancerous tumor was not accompanied by similar deposits in other organs.

2. Dr. Loring first swings a much-needed iconoclastic hammer upon the current theories of the vaso-motor and cerebrally oedematous origin of "choked disk," and then goes on to insist upon the trigeminus as the nerve whose irritated fibres set up the ocular mischief. It is known that the opthalmic branch of the fifth pair sends back, as it leaves the cranial cavity, what is termed the recurrent branch, which, in Dr. Loring's words, "after ramifying over the entire surface of the tentorium passes on to the various sinuses in the walls of which they are distributed." They supply the venae Galeni, and have seemingly been traced into the peduncular expansions by Duret, Carville, Veyssiéres, and Raymond. Dr. Loring, therefore, regards these particular filaments as the carriers of irritation in cases of intra-cranial disease. This is certainly a much more reasonable hypothesis than were those whose places it is intended to fill. But Dr. Loring omits all mention of one set of branches which are very important in this connection, and which run directly from the Gasserian ganglion to the dura mater of the temporo-sphenoidal and parietal regions, and into the neigborhood of the superior longitudinal sinus; and he also fails to call attention to the no less significant fact that all these dural branches of the fifth pair terminate much nearer the inner than the outer surface of the dura mater.

3. Prof. Huguenin narrates two interesting cases. **(1.)** Suppurative meningitis of the convexity through bacterial infection, starting from diseased frontal sinus.

A young man of 19, non-tuberculous, was attacked with febrile catarrh, violent pains in the forehead, in the ears and in the occiput, vomiting once; rapidly progressive confusion of mind, continuous high temperature, reflex neck contraction, no paralysis, choked disk, death on fifth day. There were found suppurative meningitis of the base and convexity, hydrocephalus and encephalitic foci in the central ganglia; suppurative catarrh of the frontal sinuses and of the nose; hæmorrhagic infiltration of the lungs and pleura, swelling of the spleen, dark fluid blood. No perforation of the bone over the diseased frontal sinus. Bacteria, of the most minute globular variety, in great number, were found only in the increased ventricular fluid.

Prof. Huguenin regards the whole process as infectious, although the precise mode of infection is unknown.

(2.) Chronic meningitis of the base, with hydrocephalus.

5. In the two cases of poliomyelitis anterior in children, the writer found calcified ganglion cells in considerable number. In the one case the anterior horn was sclerosed, in the other softened; in the latter, four months after the onset of the trouble. In a third case of similar nature, in an adult, dying of phthisis, calcified cells were also found, with processes. In a fourth case, the calcified cells were in a cerebral cortex that was softened after trauma, and fourteen days after this trauma. Friedländer concludes that calcification of ganglion cells is a direct consequence of their necrosis, and is constant in acute poliomyelitis anterior, which may possibly be caused by some infection.

CONTRIBUTIONS TO GENERAL NEUROLOGY.

1. Arthur Trehern **Morton.** Clinical Lecture on the question, What is that condition which has been called Urethral Fever? Lancet, April 29th, 1882.—**2.** John **Chiene.** Cranial Injuries. Edin. Med. Jour., May, 1882.—**3.** William M. **Ord.** Peculiar Disorder of Movement following Right Hemiplegia. Lancet, May 20th, 1882, p. 824.—**4.** James **Russell.** Case of Tetany. Practitioner, May, 1882.—**5.** Dr. **Schwagmeyer.** Encysted Bullet remaining Two Years in the Base of the Skull. Cin. Lancet and Clinic, April 29th, 1882.—**6.** L. **de Beurmann.** Le Signe du Tendon Rotulien (Signe de Westphal) Archiv. génér, Mars., 1882.—**7.** C. Handfield **Jones.** London. Clinical Lecture on a Case of Paraplegia. N.Y. Med. Record, April 22d, 1882.—**8.** Drs. **Sewell** and **Donaldson.** Observations on the Influence of Variations of Intra-Cardiac Pressure upon the Cardio-Inhibitory Influence of the Pneumogastric Nerves. N. Y. Med. Record, April 22d, 1882.—**9.** William **Hunt.** On Priapism Accompanying Injuries of the Spine. Med. News, February 25th, 1882.

1. The writer has written a thoughtful paper, containing two cases which have evidently been noted by the eye of a keen observer. In both, well-marked nervous phenomena were displayed after sounding the bladder with a steel sound. In the first there were extreme rigor, paresis of the lower limbs, difficulty in speaking, deviation of tongue to the right, left ptosis, partial anæsthesia in legs and feet, double vision, marked hyper-vascularity of the left-forehead, eyeball and side of the face and neck. After a

second rigor the symptoms were intensified. In nine days, however, the patient had entirely recovered. In the second case rigors also ensued, then twitching of the hands, hiccough, urine almost solid with albumen, right nose and eye swelled, herpes over face and neck, forehead, neck, right clavicle. In about a week the albumen had disappeared, as well as the other symptoms. In the first case the temperature ran up to 101°, in the last to 105°. Mr. Norton regards urethral fever (so-called) as a "reflex paralysis," or, in other words, it is an exciting impression upon or injury to a set of peripheral nerves, which by reflection through a centre may result in paralysis of the whole or part of the united cerebro-spinal and sympathetic nervous systems, either transient in character or ultimately, through the vaso-motor system, bringing about structural change or suppuration in organs or other tissues.

2. This is a clinical contribution to the question of cortical localizations.

3. These movements are described as follows: "When sitting with the right hand resting on her knees, the fingers are all extended, and are alternately moved together and separated, as in the act of playing on the piano-forte; the palm of the hand is pressed with a rocking movement against the lap, the wrist rotating in about one-fifth of a circle; the shoulder is rhythmically raised and depressed. These movements are perfectly regular and occur about 140 times a minute. They increase greatly on attempts at voluntary movement. If asked to seize a book, she brings her hand to it with a double series of pendulum movements, small in the hand and wrist, large in the whole limb, which sways several inches alternately on each side of the intended line of movement. Ultimately she seizes the book, while the arm continues its vibrations. When the whole arm is abducted the vibrations increase in extent and force, moving the limb as though it were a pump-handle vigorously worked, striking and swaying her whole body. The movements cease during sleep, and are at times almost lost when she is sitting or lying very quiet, with the hand and arm completely supported. Sometimes, on waking, she finds the arm stiff for a time. No disorder of sensation. The arm-reflex can be excited, but not ankle-clonus; mind and speech clear; right leg rigid, no rhythmic movements in it. The superficial reflexes are normal, except that the plantar is increased on the right side; eyes normal. The original hemiplegia was probably haemorrhagic, there being no valvular disease, and the signs of albuminuric retinitis having been present soon after the attack.

The movements are not those of athetosis or chorea, but resemble those of paralysis agitans, and more closely those of sclerosis of the lateral columns, and of disseminated sclerosis. The exaggeration of reflexes along with this fact supports the view that the disorder of movement probably depends upon a descending lesion.

4. This is an interesting clinical note of tetanic attacks recurring in a young female at different times from the third year of life up to the twentieth.

5. A little girl had been shot about two years before. The ball penetrated the head just above the eye, passing through both tables of the skull, causing so much orbital effusion that the eye protruded. These symptoms disappeared and the patient was apparently well in about six weeks, a small ulcer remaining, however, in the inner margin of the eye. This would heal, and then the child complained of headache, which passed off, when the ulcer reopened. There was a small sinus near the lid, which was never probed. About six weeks ago patient began to have pain in the back and occasional slight cephalalgia; convulsions soon set in, with all the symptoms of acute meningitis. *Post-mortem* the brain was highly congested, its surface studded with minute abscesses. No fracture of the orbit. Bullet was found in the sphenoid bone, below the middle lobe of the brain, near the sella turcica.

THERAPEUTICAL CONTRIBUTIONS.

1. A. E. **Bridger.** Nitrite of Amyl in Infantile Convulsions. Lancet, April 22d, 1882.—**2.** Charles T. **Beck.** Report of a Case of Traumatic Tetanus, treated by Eserine. Death. Medical News, May 13th, 1882.—**3.** Leslie **Maturin.** The Hypodermic Use of Woorara in Tetanus. Dublin, Journ. Med. Science, April, 1882.—**4.** H. J. **Salter.** Another Case of Acute Traumatic Tetanus, treated Successfully by Chloral and Bromide of Potassium. Practitioner, April 1882—**5.** Pearce **Gould.** Spina Bifida Cured by Injection of 1 Drachm of Morton's Iodo-Glycerine Solution. Lancet, May 6th, 1882, p. 737.—**6.** Minimum Doses of Iodide of Potash in Frontal Headaches. Practitioner, April, 1882.—**7.** M. **Charteris.** Identity of the Action of Iodine and Iodide of Potassium. Lancet, May 6th, 1882.—**8.** Dr. G. **Winter.** Nerve-Stretching in Tabes. Neurol. Centrllblt., 15 April, 1882.—**8.** F. **Langs.** Stretching and Division of the Inferior Maxillary Nerve, and Stretching the

Lingual and Facial, for Trigeminal Neuralgia. Med. Record, May 27th, 1882. Cure.—**10.** John **Macaulay** and Samuel **Macaulay.** Case of Diabetes Insipidus successfully treated by Ergot. Lancet, April 29th, 1882.—**11.** William **Squire.** Treatment of Diabetes. Practitioner, May, 1882.—**12.** H. C. **Lawrence.** Narcotism in Infancy. Practitioner, May, 1882.—**13.** N. G. **Gay.** Trephining for Epilepsy. Bost. Med. and Surg. Jour, April 20th, 1882.—**14.** Charles A. **Barrows.** Delirium of Salicylic Acid. N. Y. Med. Record, April 29th, 1882.—**15.** T. **Holmes.** Wounds of the Theca Vertebralis. Lancet, April 29th, 1881, p. 688.

1. Stimulated by the report of a case of tetanus successfully treated by nitrite of amyl, Mr. Bridger made trial of it with some five children, one of whom had some permanent spastic symptoms, while the other four had convulsions from various causes. The first was temporarily relieved, the others kept thoroughly in control, although potassium bromide had failed. This is certainly a therapeutic note to be borne in remembrance.

3. One case was treated by this drug, in hypodermic doses of $\frac{3}{20}$ to 1 grain. The spasms continued for thirteen days, but the patient recovered.

4. Potassium and chloral-hydrate were given in 10 to 15 grain doses every two hours, sometimes every half hour, sometimes at longer intervals than two hours, the treatment lasting from April 22 to May 12. The author reported a similar case in the same journal, December, 1876.

5. Some interesting remarks were made on this subject before the Clinical Society of London. Mr. Gould injected his case twice, with a week's interval. The tumor became solid and shrank up. The fluid removed before the injection showed no trace of sugar, and was therefore arachnoid, and not sub-arachnoid. Mr. Parker had treated a case similarly some five years before, and the tumor had shriveled away, but hydrocephalus and talipes valgus had followed. Professor Lister thought this method of injection the best treatment at present known. He had attempted treatment of spina bifida by antiseptic drainage, at first with a small drainage tube, then with two hairs, but the patient died. Mr. Gould referred to three other cases, in which he had used this injection. In one, death ensued from suppurative meningitis (spinal); a second was lost sight of; in a third the sac consolidated, but death came from

concurrent hydrocephalus. This latter patient was profusely salivated the day after the injection, probably from the iodine. Mr. Macnamara had treated a case successfully with repeated injections, although the patient almost died at the first injection from the loss of the cerebro-spinal fluid. Professor Lister mentioned that Dr. Morton had pointed out this danger, and that latterly he had recommended that the cerebro-spinal fluid should not be withdrawn.

6. Dr. Haley states that dull, heavy headaches over the brows, and accompanied by languor, chilliness and general malaise, with distaste for food, almost amounting to nausea, can be completely dissipated by a two-grain dose of iodide of potash, dissolved in half a wine-glass of water, which should be sipped slowly during ten minutes. The effect is claimed to be often magical.

7. To a patient, suffering from chronic rheumatism, Dr. Charteris gave first the iodide of potassium in two drachm doses. It produced iodism promptly. He then stopped the medicine and allowed the symptoms to subside. Tincture of iodine was then ordered. When, after having taken small doses for two days without effect, three 15-drop doses had been given, iodism was again produced.

8. Female, 38 years old, tabes had lasted 9 years. Treatment had been without avail. On November 26th, 1881, the sciatic (which one not stated) stretched by Prof. Czerny. The traction made was sufficiently strong to leave the nerve tortuous. Great pains in the back after the operation, disappearing in two days. Union by first intention. Examination on December 13, 1881, showed that the symptoms had undergone no alteration whatsoever; the patient even thinks that the ataxia has increased on one side.

APPENDIX: REPORT ON CONTRIBUTIONS TO CLINICAL AND FORENSIC PSYCHIATRY BY AMERICAN WRITERS.

Dr. F. M. Turnbull,[1] after a very careful examination of the claims made for the sphymograph in psychiatry, is of the opinion that the results of Bucknell and Tuke[2] are based on too broad generalizations, and ignore the existence of different types of the same psychosis. It must be confessed that the researches hitherto made have been based on the theory that because a single case of mania or paresis presented a special pulse tracing, all cases must present similar tracing.

Dr. C. B. Burr[3] has recently studied insanity of masturbation. He is inclined to regard it as having a not absolutely hopeless prognosis. Dr. Burr, unlike the dilletante who have laid stress on the co-existence of sexuality and religion as an evidence of sanity, more especially with reference to the Guiteau case, says that the symptoms observable in this type of insanity are: 1. An intense vanity and self-love. 2. Extreme selfishness and disregard for others. 3. Religious delusions and perverted moral sentiments. 4. Delusions referable to the sexual system. 5. Hallucinations of sight and hearing. 6. Emotional disturbances. 7. Homicidal impulses and a disposition to commit sudden acts of violence; and 8. Certain physical disorders referable to an impaired state of the nervous system. Ten per cent. of the cases coming under Dr. Burr's observation at the Pontiac (Michigan) Asylum were cases of this type of insanity. The relations existing between a body which should be the foremost representative of American alienists and the general medical profession cannot be said to be satisfactory, and the paper read before this body by Dr. Everts will certainly not tend to increase the harmony. To discuss this paper from a scientific standpoint is out of the question, as it consists largely of special pleading and glib rhetorical appeals. The paper is simply a repetition of the arguments, if so they may be called, of the paper on true and false experts, against which the late Dr. Ray, Dr. Wallace and Dr. Godding strongly protested, saying that papers of that kind should not have been read before the Association of Medical Superintendents of the Asylums for the Insane. Dr. Everts' paper was read in conjunc-

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[1] Boston *Medical and Surgical Journal, May* 11, 1882.

[2] Psychological Medicine.

[3] Transactions Michigan State Medical Society.

tion with a paper from Dr. Workman, the Nestor of Canadian alienists, and the contrast of the two papers was very marked. Dr. Workman's paper was a dispassionate discussion of an attempt to render American positions in asylums independent of politics. The discussion which these papers excited was somewhat remarkable, and shows that there are scientific elements in the Association which propose to have matters discussed from an impartial basis. Dr. Gundry, who represents in the Association one such scientific factor, stated his belief "that the best means of reform is to let into every place the light," which is certainly the belief of an honest man sincerely convinced of the truth of his position. His proposal to substitute for local boards of trustees a commission from the entire State is one means of striking at many evils. The local board of trustees are unwilling to make any undue investigation or to do aught but palliate matters for fear of injuring local interests. This system has been found to be a failure in BANKS where no political element enters. It must be also remembered that this local influence fetters the superintendent in his choice of attendants and assistants, and that it frequently compels him to purchase supplies in the vicinity when they could be had cheaper and better from a distance. To the same elements are traceable the enormous cost of asylums. Another point to which Dr. Gundry called attention, and upon which asylum superintendents will do well to ponder, is the relation of the asylum association to the *Journal of Insanity*. As Dr. Gundry says, "It is unfortunate that Utica politics should assume such prominence both in asylum circles and in the councils of the State and nation, because we do not all wish to be held responsible for the opinions of the *Journal of Insanity*, or its editors. The editors of that paper have a right to state what views they choose. They have a perfect right to adopt any one of them they choose and when they choose, but some of their methods are decidedly hurtful to the Association." It is fully time that some one should rise up in the Association founded by Ray and Brigham, to protect its good name that is now being trailed in the dust. Dr. Gray, in his answer to Dr. Gundry, was very disingenuous, to say the least. He forgot that the Commissioner of Lunacy, on whose existence in New York he laid such stress, had failed to do more than protect the dishonest and culpable Superintendent of the Auburn criminal asylum; that this official has never detected or prevented a single abuse; that, despite or with the consent of this commissioner, two scientific superintendents were placed under

the control of a warden, a mere political hanger-on. Dr. Gray laid stress on the State Board of Charities in New York, when it is well known that this body has had the Governor call attention in his message to Dr. Gray's defiance of its legal rights. Dr. Gundry is right in calling attention to the fact that in the true sense of the word the *Journal of Insanity* is not the organ of the Association, for it is within the memory of many of its members that Dr. Gray refused to publish a paper of Dr. Ray's because it protested against the theory of asylum construction, to which that journal was committed. The Association has an important work before it to purge itself of the autocratic tendencies which have been forced upon it by certain of its members. Dr. Gundry has set a good example; it is to be hoped, for the credit of the Association and its future scientific work, that this example will be followed.

The *Boston Medical and Surgical Journal* discusses in an editorial [1] the subject of insane management and construction, and deals chiefly with the hospital for the insane at Kankakee, and cites in a favorable manner the many peculiarities which make this hospital the nearest approach to the ideal hospital, providing as it does for both the detached work or cottage system of treatment and the ordinary asylum method of treatment. The question of combining scientific and business management is solved by making the superintendent the business manager, and taking his office outside of the building, while making the first assistant the chief medical officer, and placing him in the centre of the asylum proper. Whether this system will answer all the requirements of this complicated problem cannot be definitely said. An insane asylum for convicts is being built in connection with the State prison at Chester, Illinois. The *Boston Medical and Surgical Journal* objects to this arrangement on the following grounds: "The entire change of life and surroundings, so important in the treatment of insanity, would not thus be attainable. Intercourse with the prison officials and among the sane and insane convicts would be almost unavoidable, thus keeping up the pernicious prison influence. The discipline of the asylum would be more rigid than is necessary, and would probably be modeled after the prison promoted by keepers transformed into attendants. A good sized farm would be required, which could not be furnished within the prison walls. The prison food would not be nourishing enough for the insane. Such an insane

[1] November 17, 1881.

department would have more or less of the disgrace of the prison attendant upon it, and it would be difficult to induce friends of the unconvicted insane to allow the latter to be placed there." This editorial discussion ignores the very important fact that there are two classes of the insane who have committed criminal acts. There are the insane criminals whose insanity and criminality are deeply interwoven, and the lunatic whose criminal acts are a very casual incident of his disease. These two classes should never be treated together. For the former an asylum under prison discipline and in connection with a prison would be certainly indicated. For the criminal insane such a course could not fail to have bad results. Dr. Horace Wardner,[1] of Anna, Illinois, endorses very strongly the experience of Dr. Catlett, who says [2] "That he is convinced that the model asylum edifice of this era of psychological activity is, perhaps, erected at the too great expense of the humane public, as well as opposed to the best hygienic and other interests of the improved and chronic insane." This opinion of Dr. Wardner resulted from an enforced experience resulting from the the burning of a wing of his asylum. The system of building adopted at Kankakee, which has already been alluded to, would seem to fulfill the indications much better than anything yet proposed, combining, as it does, both theories, the general as well as the cottage hospital system. Dr. Folsom [3] discusses the question of home treatment in a somewhat censorious spirit. He says, "A limited number of the insane can be treated at home, but it is an expensive method. The attendance appliances that are common to many have to be furnished for one." Dr. Folsom, it is obvious, ignores the value of individual treatment, and forgets for the time being that many of the paying class of the insane have special attendance to the same extent and other appliances, which cost much more in an asylum than they would at home. The great difficulty in home treatment is the interference of friends and the lack of proper discipline. This is the great element of value in asylum treatment, and it is for this reason that many of the private homes for the insane are of value. Dr. Folsom claims that the great difficulty of sending patients into families to be taken care of for hire, is the lack of proper supervision, and this is certainly a very strong reason why the Gheel system will long remain uncopied.

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[1] *Alienist and Neurologist*, January, 1882.

[2] Report for 1881.

[3] *New York Medical Journal*, February, 1882.

THREE CASES OF NERVE STRETCHING FOR THE RELIEF OF PERSISTENT FULGURATING PAINS IN THE LOWER EXTREMITIES.[1]

BY

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N. W.——, aged 53. Father died of some "nervous trouble." Family history other than this fact throws no light upon the case.

Came under observation September 13, 1881. Gave a clear history of locomotor ataxia which had begun to develop itself seven years previously. Had been addicted to alcoholic excesses some years before the ataxic symptoms were noticed. Denied excessive venery, but owned to free indulgence. For the last two years the neuralgic pains in his legs have been severe and gradually increasing in intensity, After consultation, I decided to perform the comparatively novel operation of nerve stretching.

September 17, under ether, I stretched both sciatic nerves by an incision in the middle of the thigh. One operation occupied four and the other three minutes. The right nerve was more forcibly stretched than the left. The little finger was passed under it and it was brought entirely out of the wound, the leg being lifted entirely from the table. The

[1] A sketch of one of these operations was formerly published in the Annals of Anatomy and Surgery.

left nerve was strongly pulled, the little finger being hooked underneath, but the leg was not lifted.

September 18, patient feels no pain in right leg and a very little in the left. There is a dull pricking sensation at intervals along the integument over the right tibia.

September 19, has passed a very comfortable night and the pains have entirely disappeared.

September 25, the patient returned to his home in New Jersey.

Subsequent History.—This patient was very much improved, and remained comparatively free from pain until June, 1882, when painful sensations, similar in character to those experienced before the operation, began to be felt. These gradually increased to their former severity, and today, September 27, 1882, I received a message from him stating that he will soon present himself to have the operation repeated. This I shall do. The patient has been greatly benefited as far as relief from pain is concerned; but, although he endeavored to move, we believe that the muscular ataxia had been partially dissipated by the operation. I must confess I could not see the improvement as much as I wished to achieve this result.

Elongation of the Left Sciatic for the Relief of Persistent and Severe Neuralgia.

Mr. L——, aged about 42, came under my care on May 15, 1882. He gave a positive history of neuralgia of the sciatic, which had commenced four months previous, and had increased in intensity up to the time I saw him. The history of the case gave no indication of the cause of the disease. All medication had failed. Quinia in doses as large as gr. xl. daily for one week gave no relief. Repeated hypodermic injections of *Magendie's solution* in doses of m. xxv. produced only temporary analgia. Belladonna and the neural-

gic pharmacopœia had been exhausted without result. The Paqueline cautery along the track of the nerve had no other effect than to add to the annoyance already existing.

On May 15, 1882, I cut down on the left sciatic, between the *tuber ischii* and *trochanter major*, and forcibly stretched, by lifting, the trunk of the nerve. The patient was only slightly anæsthetized. The time of the operation, from the incision to the lifting and replacement of the nerve, was one minute and thirty seconds. I state the time to show how very simple is the procedure. The wound was closed, as in the other two cases, and wired with silver sutures, after being washed out with 2 per cent. carbolic solution. Each of these incisions healed *per primam.*

The patient recovered rapidly from the ether, expressed himself free from pain, and walked to his room. There was no paralysis of the muscles and no sensations of pain until seven weeks after the operation, when, on the day previous to my leaving the city on my vacation, the patient called to say he had had several intimations of a recurrence of his old trouble. On the 26th of September, 1882, I received a letter from him, dated Hot Springs, Arkansas, informing me of great suffering in the same leg, which had recurred shortly after he had last seen me (July 6), and had increased to such a painful extent that he had sought relief in the baths at the Hot Springs, but without any benefit. He expects to arrive in New York for a second operation, and I will report the result in this Journal. If I may be justified in making a deduction from this limited personal experience, it would be this:

(1.) That a simple operation, comparatively free from danger, will afford temporary relief from pain so atrocious that even *temporary* surcease justifies the risk and its repetition.

(2.) That the muscular ataxia of *tabes dorsolis* is very slightly, if at all, relieved by this operation; certainly not enough to justify it.

CASES BEARING ON THE DIAGNOSIS, AND LOCALIZATION OF CEREBRAL DISEASES, AND THEIR DIFFICULTIES.

BY

E. G. JANEWAY, M. D.

I have thought that it would be more profitable if I should at this meeting present before you results and cases bearing upon the subject announced on the card. Had I taken the subject of cerebral localization alone, I should feel, except in so far as I could contribute cases bearing upon this subject, that I was uselessly occupying your time. The numerous works which have appeared have culled the available cases, and presented them in shades varying somewhat with the author's views on the subject. The work of Ferrier, the published lectures of our fellow, Dr. Seguin, the numerous journal articles, and the translation of Dr. Charcot's work in English; the works of Grasset, of Charcot and Pitres, and of Boyes, etc., in French, and of Nothnagel and of Exner, give information up to the time of their issue.

Amongst the diseases which most frequently present difficulties, I would first allude to the fevers. Head and front in this class stands typhus fever, on account of the marked cerebral symptoms usually attendant on it. Yet there is none about which it is more necessary to arrive at a correct conclusion, owing to the liability to the spread of the disease by contagion. The writer knows of cases, both during the outbreak of last and of the present winter, in which a certificate of death from cerebritis, alcoholism, etc., should have been written typhus fever. The result was that the disease was spread to relatives and friends, and the mistake

discovered when an investigation as to the mode of origin in one of these latter had been conducted. The converse was also true, that cases of cerebral disease, encephalitis and meningitis were supposed to have typhus fever. The difficulty in deciding between these conditions is dependent upon the exaggeration of some of the factors of the fever, the delirium, stupor, stiffness at the back of the neck, and slowing or irregularity of the pulse. The stiffness at the back of the neck more particularly misleads, if somewhat prominent. With reference to this point, I saw in particular one lad and a group in one family. In the lad's case this was a pretty marked feature; he was delirious, somewhat stupid, pulse frequent, not irregular, and an ophthalmoscopic examination showed no apparent change in the disc or vessels. Yet there was no eruption, and there was but a single temperature record. The probabilities, save the stiffness of neck, were in favor but not decisive of fever. I resorted then, as I have on other occasions, to an additional means of decision—an investigation of the boy's surroundings. The report received was that a member of the family had died of a fever, and that others were sick at the time with the symptoms and eruption of typhus.

This study of causation is in not a few instances of marked value in deciding doubtful cases at an early period; and I can commend it to you. There is still another, which together with this will throw light on a single case of a group sick, the others having recovered, or died, providing that this one have symptoms rendering a diagnosis doubtful. It consists in a use of the duration of the disease in those recovered. Hence, if several members of a family have had a fever, or supposed brain inflammation, and the duration should have been in each twelve to fourteen days, then the probabilities are decidedly in favor of typhus; for tubercular meningitis would not attack several members of a family in

a short period of time, nor could we expect recoveries; hence the only probable condition would be cerebro-spinal meningitis, and the duration in difficult cases of this disease is apt to vary greatly. There is one condition, however, which simulates both disease of the brain and typhus, from the fact of the participation of the brain in the process in many cases. This is acute ulcerative endocarditis. We have in this, as you know, the development of soft masses on the heart-valves, which as a rule are ulcerated, and then the little fragments from these pass as emboli to the different organs, giving rise in the skin to petechiæ from the obstruction of small arteries. According to the site, size of artery, and number of emboli in the brain will a varying picture be produced. In such cases as have no heart murmur, from the disease being situated on the auricular aspect of mitrals, or from weakness of the heart's action, without defined paralysis, the presence of petechiæ must naturally excite a suspicion of typhus, if the latter disease is, or has been prevailing in the place or neighborhood. Should, however, petechiæ be present on the body, and a definite paralysis occur, as of an arm, or hemiplegia, or these have proceeded, or should aphasia occur, then a suspicion of the presence of this disease, or of multiple embolism from some other source, would at once be awakened. Last autumn I met with a patient presenting these features.

The history was that he had fallen from his wagon and been brought to the hospital. Nothing was known of his past history or surroundings. The spleen was somewhat enlarged, the rash was petechial, he was in a stupor and had fever. The left arm raised dropped readily to side. The temperature was 104 F.; pulse, 120. On the next day he remained in the same condition. Th. 104½, A. M.; 103 P. M.; pulse, 140; respiration, 40. He died at 12:45 A. M. of the third day after my seeing him. The duration of the

disease was possibly ten days. The autopsy disclosed two distinct conditions: The heart showed the aortic valves covered with a soft mass of vegetations, with slight erosion of their surfaces. In addition, pericarditis existed. The middle cerebral artery of the right side, outer branch, contained embolus. The spleen and kidneys contained numerous infarctions. In addition to the lesion on the right side of the brain, there was discovered a cyst in the anterior lobe of the left side, reaching to, but not involving, the posterior fourth of the first and second convolutions of the frontal lobe. The dura was adherent to the pia over its site, and it was filled by a plexus of convoluted vessels above and by clear serum below. It occupied particularly the middle portion of the second frontal convolution, and projected downward to the corpus callosum, covering the anterior horn of the lateral ventricle. After discovering this, an additional inquiry resulted in disclosing that the patient had been subject to epileptic seizures, following an injury received in the left frontal region several years before. A cicatrix existed over the outer part of the left eyebrow, reaching to the bone. But there was no evidence that the bone had been fractured or perforated. In attempting a diagnosis with the meagre facts at first possessed, and in the absence of a heart murmur, taking the fever and the petechial eruption into account, I advised that the patient be quarantined. Some will question the possibility of the disease having been typhus fever, to which the endocarditis was superadded. I can only say that the existence of this disease dates within the last few years, so far as concerns its recognition in the category of special disease conditions. I have seen illustrations of it years ago in connection with puerperal fever. In this disease it is, as in the case above given, the cause for the development of hemiplegias and paralysis, if such occur. In the work of

your president will be found an illustrative case, which occurred in 1872, at Bellevue Hospital, under the head of cerebral embolism.

To return to the diagnosis: I considered the possibility of the fall from his wagon having been due to the weakness of fever, and that the paralysis, or better paresis, might mean that as a result of such fall he had a clot on the surface of the brain; also that this, together with the fever, had probably caused the stupor. I should again err on the safe side in quarantining such a patient. I might add that in so far as the absence of the spread of the disease would be considered evidence against typhus, we had that as an argument in favor of the endocarditis being due to some unknown septic cause, perhaps gaining entrance to the body through the influence of his work, as driver of an ash cart. As regards the cyst on the left side, this was evidently an old affair, as the condition of the veins and its own character proved. I allude to it as another illustration, if one were needed, to show the absence of paralysis from lesion of the anterior lobe at that point. It very possibly stood in causative relation to the epileptic convulsions.

Typhoid fever rarely poses under the form of cerebral disease, owing to its longer forming stage, and the usual tympanitic abdomen, and diarrhœa. Yet, at times, patients seen late in the disease, without diarrhœa or eruption, may deceive a physician; or, on the other hand, the typhoid state, which precedes death in certain chronic brain diseases, as tumor, or in the multiple embolism of ulcerative endocarditis, or in tubercular meningitis, may mislead, if no careful history is obtained. I have known the headache, pain in the back and limbs, with some stiffness of the neck-muscles, associated with early delirium, give rise to inquiry as to possible meningitis, the bowels being constipated; and broncho-pneumonia, under such circumstances, to still fur-

ther increase the doubt, by raising the suspicion of tubercular trouble in the lung. Moreover, I have known of instances in which, on tracing the origin of typhoid fever in an institution, cases of death were found which had been considered to be due to meningitis, but which from their arrangement with reference to the other cases made it probable that they were illustrations of this possible error; and in one of such groups typhoid fever occurred among the inmates of the house to which the invalid had gone.

I have on several occasions, finding the muscles very tender, sore and stiff, thought of the possibility of trichinæ, and if on inquiry the patient admitted eating raw ham or pork, and was free from delirium or marked stupor, as happened on two occasions, whilst waiting for the dilatation of the pupil I have taken out a small piece of the deltoid for microscopic examination, in order to exclude this as an accompanying disease, should the facts warrant a diagnosis of basilar meningitis. I will allude to one of these cases when speaking of Bright's disease. The freedom from delirium manifested by some individuals in the earlier stages of basilar meningitis is remarkable, though not surprising, when the freedom of the convexity is considered, and the absence at such time of marked pressure effects. The examination of the muscle can be performed so easily that no objection need be entertained to it in appropriate cases.

Malarial diseases, fortunately, are not often mistaken for cerebral, though the converse is not true. For as regards those with paroxysmal headache, especially if conjoined with fever, a mistake is not unlikely to happen. Tumors, particularly, are apt to be attended with cephalalgia, and I have known it to be as periodic as a tertian. Later I shall narrate an illustrative instance bearing on another subject. The earlier stages of cerebral abscess, or of a pachymeningitis suppurativa externa, leading to abscess, or to septo-meningitis sup-

purativa, may be attended by both headache and hectic type of fever, which, as I had occasion to note this summer, may so simulate a malarial as to render a decision dependent upon a careful survey of all symptoms, and upon the presence of an otitis, an injury of the skull with bare bone, or of some other lesion exposing the bone to the influence of the atmosphere and germs floating in it. I have twice known so simple an operation as rhinoplastic, the skin being taken from the forehead, to follow the above course. Unfortunately, we meet cases of a severer type of malarial fever, so far as our city is concerned, usually coming from more tropical climates, which may lead in the comatose and convulsive types to the opinion that a cerebral disease exists. It is not impossible to have a coincidence of the two diseases; and the malarial may produce such a periodicity in the symptoms that the question may be raised which disease should be given the prominence in the treatment. I saw such a case last week, at Bellevue Hospital, in a man without a history, semi-unconscious, with marked rigidity of the back of the neck and some stiffness of the other muscles, but with a temperature of 104°F. on one day, 99° at the end of twelve hours, and 104° F. at the end of twenty-four hours. I could discover nothing else, on ophthalmoscopic examination, than swollen retinal veins and capillary congestion of the disc. The autopsy, two days later, showed basilar meningitis and the lesions of malarial fever. I might add that in this case I examined a drop of blood from the finger and one from the spleen, but without finding true pigment. I have found, in my notes of autopsies, a previous instance of this same combination, cerebro-spinal meningitis with the pigmented liver and spleen, indicative of malarial fever. Where malarial fever is abundant and severe, it is probable that such combinations would not be found uncommon.

Pneumonia and pleurisy have been in numerous instan-

ces mistaken for meningitis and cerebral diseases. The former leads to this mistake much more frequently than the latter. It arises from the same condition as previously mentioned, an undue prominence of muscular pain and stiffness in the cervical region, together with a reaction of the nervous system to the fever out of proportion to what ordinarily obtains. The error is not nearly so likely to obtain in adults as in children with their delicate nervous organizations. It is aided by the absence of the physical signs of pneumonia, which not infrequently begins in the centre of the lung and takes several days before it reaches the surface. I have, in former years, seen as many as three cases of this error in a single fortnight. He who desires to give a positive opinion on a first visit will not infrequently be misled in these and similar conditions. Moreover, it is not alone the central pneumonias which deceive, but those which begin in that portion of the lung high in the axillary region, or at the posterior summit of the lung. On the other hand, meningitis may co-exist with pneumonia, or different cerebral diseases be complicated by its hypostatic or lobular types. The history and order of symptoms must be used in deciding such cases.

Bright's disease of the kidneys, more especially the small contracted type, in various ways tends to mislead the physician. It is a frequent accompaniment of cerebral hemorrhage, so that the rule of diagnosis sometimes given, that albumen and casts in the urine are to be allowed considerable importance in coming to a conclusion as to the cause of an apoplectic state, must be accepted in a guarded manner. I attach less weight to them than other considerations. These take into account the age of the patient, the probable type of kidney disease, whether associated with hypertrophied heart and arterial changes, and far more important, the presence or absence of paralysis, monoplegic, hemi-

plegic, or general. I have known this finding of albumen to mislead in different cases, where the extravasated blood was beneath the skull, on the surface of the brain from pachymeningitis hemorrhagica, or from rupture of an aneur ism of one of the arteries, or of a vein going to one of the sinuses. Whilst at times we may have a transient paralysis following the convulsions of Bright's disease, and a recovery take place in a manner to render it improbable that extravasation of blood had occurred; yet such occurrence necessarily must arouse a strong suspicion of hemorrhage or of some other morbid process to which the paralysis is connected in the relation of cause and effect.

Should there be any such method in the convulsion as is usually due to surface irritation of the brain, repeated convulsions beginning at one point, extending to one side, and limited there, and if such convulsion should be unattended with loss of consciousness, it would naturally lead to the opinion, if acute in its development, of hemorrhage in the cortex at its motor portion. If paresis or paralysis of the convulsed side were found in the time between the convulsive seizures, it would tend to confirm the diagnosis. I saw such a case recently at Bellevue Hospital in a female with a history of having become unconscious, of having a fever reaching 104°, subsequently remitting, then convulsive seizures in the left side of the face, arm and leg, with a paresis of these parts in the intervals between the paroxysms. These seizures lasted for two days. During the convulsions she was able to recognize and even to say a few words. Later she became entirely comatose. Her urine was scanty, albuminous, and contained casts. The autopsy showed considerable fluid blood and bloody serum in arachnoid sac. There was a firm blood clot adherent to the inner surface of the dura mater over the middle of the brain on the right side corresponding to the situation of the lower two-third of the ver-

tical convolutions and the anterior extremity of the tempero-sphenoidal lobe. There was only a thin layer over the upper third of the vertical convolutions.

The kidneys showed chronic diffuse nephritis.

The following case will illustrate a little different phase:

C. R——, aged 36 years, was brought to the hospital unconscious. Those coming with him said that he had stayed at an hotel down town, had been a hard drinker, and had fallen in his room in the morning; then coming down stairs, he had again fallen, striking his head against the bar; immediately after had convulsions, and that after these he became and had continued unconscious. When observed he was in coma, without stertor, pulse 80, regular, insensible to skin irritation, general paralysis, pupils equally dilated, not acting to light. The urine, drawn off by a catheter, was found loaded with albumen. Later, stertor developed, the pulse became frequent, and death occurred fourteen hours after the convulsion.

The autopsy showed a small, superficial clot on the left side in the arachnoid sac, and a much larger clot on the right side, compressing the brain. There was a clot in the longitudinal fissure, also. His kidneys presented the appearance of chronic nephritis.

Of all the varied cases which I have met none has impressed me more strongly than the following, concerning the uncertainty of diagnosis:

Young man, 16 years of age; had at first been sent to the insane pavilion owing to a wild delirium, during which he used very profane language. There he stated that he had had two convulsions, one several months, the other ten days before his admission, and that he had been treated for kidney trouble. Later, he became less delirious, so that in response to questions he seemed simply to fail in proper regard for his surroundings, being alternately profane and facetious in his response to questions. His marked symptoms were pain in the muscles on pressure out of proportion to cutaneous tenderness, marked rigidity of the muscles at the back of the neck, pupils contracted responsive to light, marked choked disc appearance in each eye, the œdematous infiltration being so great as to allow the disc to be made out only by the course of the vessels. The hearing was good. The

power was equal in the muscles on the two sides of the body, and there was no evidence of paralysis. The urine was retained. Later, he became unconscious, and on the next day was in that condition, with well marked Cheyne-Stokes respiration, of 7 second pauses and 6 to 8 respiratory acts between the pauses. One quart of urine was drawn from bladder by catheter.

The autopsy showed that the spinal cord was normal, except that the cerebro-spinal fluid was stained reddish by blood-coloring matter, as was the pia mater of the cord posteriorly. The brain showed a clot of blood, three inches in length, by two in width and one inch in thickness, in the lateral ventricle of left side, anterior horn and body, and a bloody serum in the other ventricles in quantity greater than normal. The hemorrhage came from a small rupture in the wall of the lateral ventricle at the anterior extremity of the tænia semicircularis. A transverse rupture about three-quarters of an inch long existed. The surrounding tissue was slightly blood-stained. In the centre of this little rent was a small miliary aneurism, from which the blood had come.

The heart showed left ventricular hypertrophy. The kidneys, though apparently large, owed their size to hydro-nephrosis. The structure was not only compressed, but of the small granular variety in structure. The pelvis showed a chronic inflammation, and contained calculi of mixed blood-clot and phosphatic nature. There was no stricture of the urethra nor any calculus in the bladder.

The phenomena observed during life seemed to warrant the diagnosis of basilar or cerebro-spinal meningitis in addition to any kidney trouble. I must confess to having been surprised at a ventricular hemorrhage instead, considering the age. It may be questioned whether the retinal appearances were due to the ventricular hemorrhage, or dependent upon the kidney disease, and of anterior date to the hemorrhage. As sight was not markedly impaired at the time of examination, his history could throw no light upon that point. The phenomena of rigidity, etc., were to be referred to the irritation of the ventricles, and to the increased fluid in the cerebro-spinal canal.

It should be stated that the arteries of the brain did not appear diseased, so far as the circle of Willis and pia were concerned.

Fearing that if I continue to speak in the main of the results of *post-mortem* examinations, you may feel that

the majority of the cases observed pass under that crucial test, I desire to enter the following case, because at first the optic nerve appearances led to the supposition of Bright's disease. The history was as follows:

Male, twenty-two years of age, without any family or personal tendency to disease. His habits had been good, and he was free from venereal disease. His first symptoms consisted of impaired eyesight, and the ophthalmoscope revealed appearances to the examiner which led him to suppose the disease due to Bright's disease. The whole subsequent course has, however, refuted that idea, and more than thirty examinations were made of the urine with negative results.

His eyesight improved, independent of any treatment, to such an extent that he was able to read for and pass a difficult examination. Shortly after it again became so impaired that he was unable to read type, but at the end of ten months from his first attack it again improved, until at the end of a year he was able to read. He enjoyed perfect physical health until one year and eight months from the inception of the disease. For during the spring he again passed a difficult examination, as he had done before. At the end of the time mentioned he was seized with a violent headache, frontal on each side, and with nausea and vomiting. This condition lasted for two weeks, and the complaints were most marked after sleep. At the end of this time he awoke from sleep delirious, remaining so for twenty-four hours. The delirium disappeared after free purgation. The headache, however, still continued, with vomiting, for five days. After the application of six leeches to frontal region and use of blisters, he was comfortable for four or five days. His pulse was 40 to 45, temperature normal and secretions healthy. Then headache and vomiting returned for several days, relieved by similar measures. This paroxysmal headache continued for four or five weeks, with two or three days of remissions and of attacks. Then the intervals increased, and the attacks grew shorter and milder. During this period he had several times sensations as if he were going to sleep. At times he had also noticed the sensation as if he had a hard, rough substance of the size of a pigeon's egg principally at the tips of the fingers, now in mouth, cheeks, often across the forehead, rarely below the level of the chest. He had no mental impairment until one year and nine months from the beginning of the complaint. I first saw him at this time. He was emacia-

ted, weak and listless, lying on the sofa on account of headache. He was obliged to walk with two persons supporting him, as his legs tended to give way under him. He presented no difference on the two sides, all of the cranial nerves except the optic reacted well, and were free from lesion. He understood and answered questions only a little indifferently; he occasionally forgot the names for colors, yellow and violet. His eyes were bright, pupil reflex to light good. The sensation was perfect. The urine was voided slowly. In walking he had no vertigo, tendency to rotation, simply a tendency, unless supported, to sit down. The sight was much impaired, and the optic nerve presented the swollen or choked disc appearance. I heard at the end of two months that he grew worse, the mind becoming gradually more and more blunted, so that he simply recognized people while by him, but then lost all thought of them. He also had for some days a tremor in the right arm. After passing a couple of weeks in this state, he became much better in all respects, eyesight included, and was able to read, walk, etc., and gained flesh rapidly. He stated that during those two weeks everything appeared a dream, and that he had no recollection of it. For several months he remained much the same, save occasional attacks of headache and vomiting, and for a time had a tottering, unsteady gait. To make a long story short, he recovered, with complete loss of eyesight. At the end of three years he was able to act as a telegraph operator. I think that his mental and motor symptoms were due to ventricular distension, brought about by the lesion which produced the optic neuritis. I at first feared a tumor. The freedom from other symptoms than those affecting the sight would, as both eyes participated, put the lesion, perhaps, in the corpora quadrigemina, and then the secondary motor and mental phenomena be due to some cause which produced, in consequence of pressure or inflammation, dropsy of the ventricles.

The question of locating cerebral disease and of deciding upon its nature must ever be a matter of interest to the physician. I have had several cases which are possessed of enough interest to present them, notwithstanding the numbers of similar nature which are accumulating in the literature of this subject. Before doing so I would draw attention to certain points which it is always necessary to bear in

mind when attempting this problem. At first we are obliged to decide whether it is probable that the disease is of itself inducing the symptoms, or whether these are partly or mainly due to the irritation or softening induced by the tumor, etc. This is at times of practical value, as a surgical operation may depend in some measure for the site of its performance upon the answer. As an illustration, I will suppose that a man has been injured in a given portion of the head, it may be anterior or posterior to the motor tract, but that after a time motor symptoms become added in the form of hemiparesis or monoplegia. The symptoms being supposed to indicate an abscess, is this seated beneath the site of the wound, and are the symptoms due to spreading inflammation reaching the tract in question? Such an answer can only be given by a careful consideration of all the facts. The evident existence of symptoms of trouble in the brain before the motor symptoms occurred would point towards an outside process, increasing till it had involved the area presiding over motor functions. When a foreign body has entered the brain and remained without motor symptoms until after extraction, as in the case recently occurring in the practice of, and published by Dr. Noyes, then the probabilities would be strong that the site occupied by the foreign body would form the centre of the new disturbance. The same explanation has to be adopted for motor symptoms added to those already existing, which, perhaps, have for a long time indicated a cerebral tumor. In the next place the question will arise whether the morbid process is diffused, as in meningitis, or local, and the symptoms present indicate the extent of the lesion. We will find that meningitis, though general, may produce effects which give it the aspect of a local process in some respects. Somewhat similar is the possibility, in a given case, that there may be several centres of disturbance, as in multiple embolism, tumors and abscesses. Then,

again, in so far as the decision of the value of a given case in settling the functions of a definite area of cerebral cortex is concerned, the requirements must be very precise. But we may add cases which, though not sufficient for this purpose, increase somewhat the weight of these more precise cases. For the first purpose cases are needed which are limited in area, stationary in character, and not passing to any considerable extent beyond the limits of the gray matter. Some of the cases, in fact many, which have been used are open to objections on these scores. Then, again, as regards others which seem to come closer to the requirements, the question may be raised as about some of Exner's series, whether though so localized by the appearance of the softened patch, vessel obstruction may not have produced some results beyond those due to the softened patch. I might briefly indicate the methods which have been employed in deciding the question of special areas in the cerebral cortex having definite functions.

We may discard at present the localization of the speech centre, or rather, as some prefer to say the emissive centre, in contradistinction to the perceptive centres, auditory and optic, which date back to the publications of Gall, Bouilland, Dax and Bevan. The impetus was given by the experiments on animals by Hitzig and Ferrier, the electrical irritation of certain portions being followed by motions in certain parts of the body. Then followed the attempt to prove that a lesion in a given site induced symptoms differing from those due to a lesion situated elsewhere, and hence the accumulation of two sets of cases, the positive proving irritation or paralysis due to a lesion situated in a given portion of the so-called motor portion, and the negative in which lesions situated elsewhere failed to produce such results. The same method is used with relation to surface areas of sensation, sight and hearing. In the next

place cases, though few in number, are found, which show that these so-called motor areas underwent atrophy if the arm or leg, over whose functions they presided, had been lost for a long time. So again other few are met which exhibit, along with the destruction of these motor areas and subjacent fibres, descending degeneration descending into the internal capsule and pyramidal tract, as in the case of the destruction of the internal capsule.

As regards these series of proofs I desire to record the following:

The first was that of a man who was under my observation for two years. He was only able to say two words, *ja* and *nein*, the German for *yes* and *no*. Yet he was bright and intelligent. He had no paralysis of arm, leg, face or tongue. He was simply affected with aphasia and agraphia, the latter to a less extent than the former, though not to any such extent of difference as to serve him in giving me any idea of his past life or how he came to be affected as he was. He had on the left side of his head in the position of the inferior and anterior position of the parietal bone, a triangular depression capable of admitting the end of the little finger. When asked how this had been brought about, he expressed himself by gestures, about which there could be no doubt. He at first imitated a man charging a hole drilled in a rock, the lighting of a match, and the application of it, then the too sudden discharge, and the falling of something on his head. After this he would imitate his being rendered insensible. He made no improvement as far as his aphasia was concerned.

The next case is that of Patrick Quigley, aged 47, a native of the United States. He was well until the 7th of February, when he was struck with a billiard cue in the left fronto-temporal region. He fell and lay for about twenty minutes motionless and unconscious. On coming to himself he had considerable pain and swelling at the seat of the blow, and found that he could not speak, and that on swallowing water it flowed out of his lips. There was no loss of power in the arms or legs. When seen three days later, there was a swelling at the left temple, but no wound. He had severe pain in the head. There was a paresis of the muscles of the right side of tongue and of face below the eye (facial paralysis

of cerebral type). There was no paralysis of the right arm or leg, nor of the opposite side. He was unable to repeat his name, to name an object shown him, and to repeat what was said to him. On attempting to write his name, or some other simple and familiar word, he made some of the letters right, but either omitted, transposed or substituted in the case of others, and manifested marked signs of annoyance at this failure. I, moreover, tested him as to his perception of words, and found that he understood the difference between the right and wrong pronunciation of a word.

The treatment consisted in quiet, a blister to the back of the neck, cold at the point of injury, laxatives and the use of iodide of potassium. He made a comparatively rapid recovery, so that at the end of eight days he was able to speak almost any word, though he did it with considerable stammering, effort and hesitation. The headache, vertigo, and facial paralysis also gradually improved, so that he was discharged at the end of six weeks without any paralysis of the face or tongue, with scarcely noticeable aphasia or agraphia. He, however, said that he forgot the name and spelling of some words, and that at the time of his illness part of his trouble was due to the fact that he could not make his tongue or hand say or write what he wished, and another to a forgetfulness of the right word or letter.

Cornelius Keating, 13 years of age.

The father died of cancer of the stomach, at 52 years of age, but beyond this the family history, as far as known, was free from hereditary taint.

The boy stated that a little time before his illness he was struck in the head with a stone. Then he had a fall down some ten steps at school, coming on head; then, on getting up, he ran against a door with his head. A month later, while running, he tripped, fell and struck his head against a curbstone, receiving a black eye. Two weeks after this he began to complain of severe headaches, and his mother noticed that his left leg was a little weaker than the right. He could not lift it so well, and dragged it a little. The left arm also, according to the boy, was a little affected, and that before the leg.

The mother says also that at times she thought that there was a little squint in the left eye. The headaches continued, occurring three times a week, and lasting most of the day. With these he would vomit what he ate. Involuntary starts have also oc-

curred in the shoulder, arm and hand, muscles jerking the arm up. These occur from once to several times a week. About four months after the beginning of these symptoms his sight began to fail, until at the end of six weeks he had become almost blind. No convulsions had affected him, nor had he any trouble with the bladder or bowels. I examined him about six months after the disease had begun, with the following results: The boy was of medium size for his age, his left pupil was dilated, not reacting to light, and he was unable even to perceive light in this eye. His right pupil was dilated, reacted sluggishly to light, and he could perceive light impression on a large object. He had double optic neuritis, marked choked disc, with swollen veins.

The hearing in left ear was only one-half that of the right. The sense of smell was impaired in the right nostril, but only for fragrance, as alcohol was perceived on both sides, though a perfume distinguishable on the left readily could not be told on the right.

The movements of the left arm were slow, stiff, uncertain. The dynamometer gave 30° on the left side; 50° on the right. The movements of the left leg were slow, and of the same peculiarity as the arm, being weaker than its fellow. There was no difference of tactile sensibility on the two sides, nor on face. He had a pain in the left leg, when he extended it, of a stretching character. This examination was made August, 1877.

The boy died April 21, 1878, at his home. The friends stated that he had continued in the same condition, with headache, vomiting, blindness, left hemiplegia and intense pain in the right leg. Three days before death he became partially comatose with fever.

The bones of the skull were thinned, and presented spaces where absorption had occurred in parietal of right side, and also in lambdoidal suture.

The dura mater was firmly applied to skull, and on its interior showed the markings for convolutions. On section of the dura mater the brain projected, as if the space had been previously too small. The arachnoid was dry. The convolutions were flattened against the skull on both sides. A portion of a tumor appeared in the right posterior central convolution, near the longitudinal fissure, while the central half of this convolution was cyst-like from softening. A tumor of lobular structure, light grayish color, comparatively firm, occupied the white matter of the right hemisphere in the following portion. It reached in the longitudinal fissure from

the corpus callosum to surface, appearing at the point indicated above in the posterior central convolution. On section it was found to have the size of a small orange. It reached forward as far as the first and second convolutions (frontal), backward into the precuneus. It slightly involved posterior fibres of corpus callosum, and reached as far backward as this.

The convolutions especially affected were the anterior and posterior central convolutions, the latter especially, except its lower portion, being pretty well destroyed, the posterior part of the gyrus fornicatus, the posterior part of the first frontal, the paracentral lobule and the anterior portion of the precuneus. The brain around the tumor was markedly softened, and this softening affected the corona radiata fibres and those in the posterior part of the corpus callosum. The lateral ventricles contained an increased quantity of clear serum, the left being the larger. There was no other growth or lesion of brain. The right optic nerve was smaller than the left.

The tumor was a glioma, with round and branched cells.

The softening was probably an event of the few days previous to death, during which he had fever.

The following case shows that pressure on the surface of one side, particularly on the paracentral lobule and its neighborhood, may cause hemiparesis and convulsions.

P. M——, male, aged 20 years, was admitted to Bellevue Hospital, having received an injury on his head three weeks before. The wound, which had nearly healed, showed a fistulous opening leading to bare bone. It was situated on the right side over the portion of frontal bone at the point where the hair begins, and near the median line. He had paresis of the left side, arm and leg, the latter being the most affected. The only voluntary power which he could exert was to grasp with the fingers when told. Flexion was more powerful than extension. He could slightly flex forearm, but could not extend it. He had no ability to move foot or leg when told to do so. There was no apparent paresis of face or tongue, but the sensation of the affected side was blunted. The next day he became almost comatose, and later developed convulsions. During two which I witnessed the paralyzed side was the site of predominant rigid spasm, the body being arched to that side. During the continuance he winked on touching the conjunctiva of the right side. After the convul-

sion the paresis continued as before, but he did not talk, though exerting some movements when told and whispering some words. I considered that the decision lay between abscess and meningitis, with predominant affection of the paracentral lobule in consequence of the greater implication of the leg and foot than of the arm and hand. Prof. Alex. Mott performed the operation of trephining, and exploration was made for pus beneath dura with hypodermic syringe needle. There was a suppurative pachymeningitis beneath bare bone. The exploration only succeeded, though the needle was introduced directly downwards and then backwards towards paracentral lobule, in obtaining a few drops of thick dark blood. It seemed almost useless to make any further operation, as the convulsions pointed towards meningitis as the more probable cause; yet a second exploration was made and also failed. A convulsion during operation showed pleurosthotonos first on one and then on the other side.

The autopsy showed suppurative pachymeningitis interna, the pus being in sac between arachnoid and dura, particularly that portion between falx and paracentral lobule. The whole surface of falx and of arachnoid over longitudinal fissure convolutions was covered with pus, yet the greatest was at the point indicated, and it had here made a marked depression on the inner aspect of the paracentral lobule. This pus was held by falx, lobule and some fibrin contained in exudation. These lesions were on the right side. A thin layer of pus was also present on the convexity of this and the opposite side, and on the falx on that side. There was a beginning leptomeningitis over the first frontal and over the upper extremities of the anterior and posterior central convolutions. In the anterior lobe medullary portion of first frontal convolution there was a dark clot of blood, posterior to site of injury and about two inches long by one inch wide. Its walls were in the main smooth, though above and to the outer side there were punctate extravasations.

The points of interest in this are the following:

The proximal paresis of the arm was greater than the distal; the paresis of the leg absolute, and hence greater than of arm. Again, that the lesions situated at the upper portion of central convolutions, as in so many other cases, produced paralysis of limbs, not of face or tongue. The puru-

lent pachy- and beginning leptomeningitis show that no operation would have benefited patient.

The patient was under the care of Prof. Mott and Dr. Bull.

A. C——, *æt* 45 ; Ireland ; domestic.

The patient was brought to Bellevue Hospital August 10, 1874, with the history that she had been thrown out of a window on the 6th, in a drunken brawl. She had a scalp wound one inch long over the left parietal bone, not exposing it, and a fracture of the olecranon, with a small communicating cut.

When admitted the patient was stupid, answered questions in monosyllables, had no apparent paralysis, pulse feeble.

She gradually grew more stupid, with increasing rapidity of pulse, passed urine involuntarily, failed to answer questions, but would protrude tongue when told. She died at the end of four days. The autopsy showed that the patient had chronic diffuse nephritis, an hypertrophied and dilated heart, and somewhat calcified mitral valves. The brain showed some œdema of pia mater, and slight distension of lateral ventricles with clear serum There was a tumor about the size of a pullet's egg situated in the left middle fossa of the skull, pressing on the anterior extremity of temporo-sphenoidal lobe, and on the left optic nerve. The tumor grew from the dura mater, and was a spindle cell sarcoma. A number of years ago I made an examination of an old woman, an inmate of the almshouse, in the anterior lobe of whose brain there was a tumor the size of a small orange, a fibrous glioma with mucoid softened centre, around the outer part of which the brain was softened. This tumor was in the white mater of the frontal lobe, anterior to the central convolutions. It was affirmed that she had not been paralyzed on either side, but that while walking she had a fall, became unconscious, and died of a supposed cerebral hemorrhage.

Male.—This patient had been affected with cirrhosis during life, and had died from its results. He had also a paralysis of the sixth and of the ninth or hypoglossal nerves on the left side.

The autopsy showed a pachymeningitis of slight amount on convexity. It, however, stretched to the base, and at the point of emergence of the ninth and sixth nerves compressed these. The sixth on the left side was also more firmly adherent to its fellow from its point of emergence through dura till its entrance

in sphenoidal fissure. There was partial atrophy of the left half of tongue, with a granular or granulo-fatty state of muscle fibres or simple atrophy.

The new membrane on the dura was made of connective tissue, contained capillaries and pigment. The liver was markedly cirrhotic, the spleen enlarged, and the muscles of the body contained a few encapsulated trichinæ.

I publish this case, because at times it is claimed that these nerves are not implicated in this process.

I have presented to the Pathological Society the brain of H. G., in which there was a tumor in much the same situation as in the case of the boy, with identical symptoms, hemiparesis of arm and leg, advancing to complete hemiplegia of these parts. Also, as bearing on a point raised by Professor Dalton of the cause of recovery in destruction of the motor area—that of a boy with congenital heart disease, the aorta coming from the right and the pulmonary artery from the left ventricle. There was a thrombus in the right ventricle, and the emboli from this led to the destruction of the brain supplied by the anterior and middle cerebral arteries on the left side, so that these parts were represented by a pultaceous mass. Dr. Castle, who brought the brain to me, said that this child had at first been completely hemiplegic and aphasic. But later had recovered somewhat, so that it could manage to walk and use its hand and arm somewhat, as well as to say, "Mamma and papa." He also said that it had so far improved as to produce the impress of reflex paralysis on a neurologist who saw it, and that he desired to circumcise the boy in the hopes of a cure.

A CASE OF SLOW AND ONE OF SWIFT COMPRESSION OF THE SPINAL CORD FROM DISLOCATION OF THE ODONTOID PROCESS.[1]

BY

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CASE I.—Left Hemiplegia of Spinal Origin, with Torticollis; Death at End of Fourth Month; at the Autopsy, Odontoid Process found Displaced and Cord Compressed.

E. D——, male, *æt.* 11 years, was admitted to the Hospital for the Ruptured and Crippled, March 16, 1882. The family history contained nothing bearing upon the case. Until a year ago he had been subject to epileptic fits. In September, 1881, a playfellow gave him a severe blow on the neck with his hand, and on the following day it was observed that the head was held a little awkwardly, and pain at the occiput was well marked From this dates a torticollis. The cervical glands proceeded to suppuration, and two months from the date of the blow above recorded an abscess was opened.

The patient's first appearance in the outdoor department was on the 27th of February, and from a cursory examination I made a diagnosis of left spinal hemiplegia, with simple spondylitis, and advised admission to the hospital. A more thorough examination was made March 1st. There was a half-inch atrophy in both superior and inferior ex-

[1] Read at the last meeting of the American Neurological Association.

tremities. The arm hung limp by the side, and the foot was brought to the floor, as he walked, with a "flop." Although not very lame, the gait was characteristically hemiplegic. By great effort he could raise the arm from the side a distance of twelve inches, the suprascapular muscles seeming to execute the act. He could feebly flex the forearm, and the finger flexors were so strongly contracted that he could not use the dynamometer. The entire limb was hyperæsthetic, but the degree of hyperæsthesia was not ascertained. All the muscles responded to both currents, with diminished contractility in the atrophied groups. The tongue, on protrusion, deviated to the left side very perceptibly, while the uvula deviated to the right. The tonsils were very large, and it was with considerable difficulty that the posterior pharyngeal wall could be thoroughly explored with the finger. This examination, however, was attended with absolutely negative results. The head was rotated to the left and tilted to the right. Passive movements, if carried to extremes, were resisted very much. An unnatural projection in the post-cervical region to the left side and near the occiput seemed to be the spinous process rotated out of the vertical axis.

The examination was completed on the 16th, the date of his admission to the hospital. Moderate spinal concussion gave no pain, but on pressure over the projecting spinous processes there was decided tenderness. The deltoid was much atrophied; pronation and supination barely possible; flexion and extension of the hand and fingers ditto, although there was no appreciable atrophy of the hand. The patellar reflex and the foot clonus were greatly exaggerated. The extensors of the thigh were weak, but not palsied. The flexors and extensors of the leg possessed less than normal power, and active dorso-flexion of the foot was quite impossible. No contractions about knee or foot existed. He

has had an ulerative keratitis of right eye, with much conjunctival hyperæmia.

His head was suspended in a spring attached to a spinal brace, and faradism daily was begun. The keratitis became so alarming that by the advice of Dr. Agnew he was transferred to the Manhattan Eye and Ear Hospital, April 1, when it was noted that most decided improvement had taken place in the deltoid, and indeed in all the muscles of the limb. The head support had proven of undoubted value. During his stay in the Manhattan—one week—Dr. Seguin very kindly continued the electrical treatment. The eye symptoms subsided promptly, and the case altogether did well. The parents removed him from our hospital on the 13th.

April 22. Dr. Seguin reported yesterday that the patient had been re-admitted to the Manhattan, coming under his care, and that in a few days he became perfectly helpless. The case was discharged, and the mother advised to place it again under orthopædic treatment. His advice was not taken.

The subsequent history was obtained April 30, the day of the autopsy, twenty hours after death, Dr. Seguin and Dr. Geo. W. Ryan being with me on that occasion. Very soon after leaving the Manhattan the paralysis became complete, and at times he suffered from violent spasmodic action of muscles of the extremities. He complained much of occipital and frontal headache, and slowly lost ground up to the evening of the 28th, when he passed a restless night, though his symptoms did not seem at all alarming. On the following morning, about six, he attempted to rise, gave a wild stare, a gasp or two, and expired. He had no convulsion, no facial contortion, no squint.

The spinal column was opened from behind in the upper two-thirds of its extent. The spinous and transverse pro-

cesses of the second cervical vertebra were unusually prominent, and it was our opinion that they were considerably enlarged as well as very hard. No pus cavity could be found, and the spinal canal throughout its cervical and dorsal regions presented nothing abnormal; no softening of the bodies. The cord was carefully removed and its coverings presented no pathological changes. The brain was examined thoroughly and no lesion discovered. On removing the cerebellum with the medulla and upper portion of the cord the odontoid process was found tilted backwards, almost completely obliterating the spinal canal. The accompanying drawing, by Dr. Wm. G. Bull, illustrates the appearance of the parts.

The tip of the little finger could with difficulty be pushed through the foramen magnum, and if the head were flexed on the sternum it was quite impossible to so introduce the finger. The process was not denuded of periosteum, but was loose at its base, and the apex tipped towards the left.

The spinal cord and the lower portion of the medulla in this vicinity were very soft, quite limp, and a marked indentation was seen in front, caused apparently by the odontoid process. It was not learned how the ligaments became involved, but it was presumed that the spondylitis had brought about their detachment.

Dr. Birdsall has made a report on the sections I made, and to him I am likewise much indebted for the drawings which accompany his report.

REPORT BY DR. W. R. BIRDSALL.—The specimens presented to me by Dr. Gibney for examination consisted of sections, stained in carmine, and mounted in balsam, from (*a*) the decussation, (*b*) the superior cervical cord—compressed portion—and (*c*) the middle cervical cord.

In *a* no evidences of disease were observed. In *b*, represented by Figs. 1 and 2, Plate I., the whole section presents

a cloudy appearance, the usually distinct outline of the axis cylinders and their medullary envelope being absent except in the peripheral portions or at the extreme margins of the lateral columns. In all other portions there exist, in varying degrees, swelling of the medullary sheath and also of the axis cylinders, great numbers of lymphoid elements, myelin drops, granule cells and granular detritus, the latter forming in certain portions small, irregular, yellowish patches of completely disorganized matter (represented in deep black, Fig. 1), occupying the inner portion of the left crossed-pyramidal tract, involving the neighboring gray matter. Another less marked patch exists in the corresponding column of Burdach, and a few specks in the right crossed-pyramidal tract. The lateral portions of the left crossed-pyramidal tract exhibit, to a marked degree, the changes above described, and, in addition, hypertrophy of the neuroglia, the septa, and the walls of the blood-vessels. The right crossed-pyramidal tract presents similar changes, though much less marked. Other portions of the lateral and posterior columns are irregularly streaked, as shown in Fig. 1; the darker portions representing the parts most affected. The most decided changes exist in the central portion of the columns of Burdach and the gray matter about the central canal, involving the central gray columns, showing in some portions almost complete disorganization, all traces of the neural elements having disappeared, leaving a mass of granules, granule cells, lymphoid elements, myelin drops, with numbers of hypertrophic and occluded blood-vessels. (The latter appear in Fig. 1 as black dots, and in Fig. 2 more highly magnified.) These vessels are a striking feature of the specimen. All the layers seem to be involved in the hypertrophy. Complete occlusion may be frequently observed. No perivascular spaces are to be seen, but many vessels appear to be encased by one or more

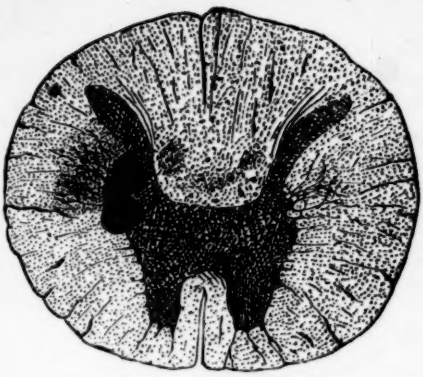


FIG. 1 (see note, p. 495).

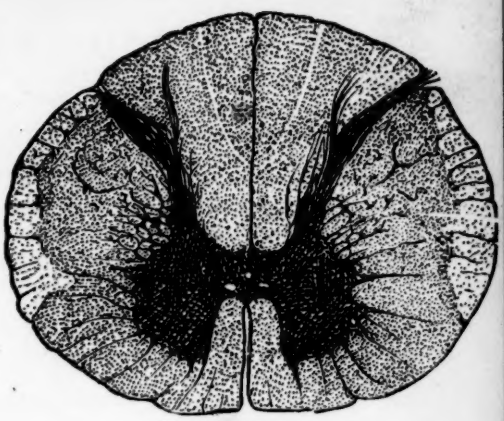
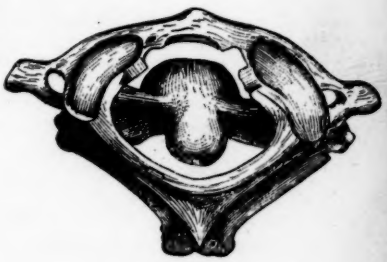


FIG. 3 (see note, p. 495).

FIG. 2 (see note, p. 495).

See p. 493.



See p. 493.

See p. 493.

FIG. 1, p. 496.

layers of lymphoid elements. The extreme portions of the anterior horns appear normal, while the posterior horns are richly infiltrated with lymphoid elements.

An interesting feature is that the central portions of the cord, and not the periphery, suffered most from the compression. The vascular changes were decided in this region only. The interference with the circulation of this most vascular region of the transverse area of the cord is probably the most important factor in the production of the lesion.

In *c*, below the point of compression, the column of Türck and the greater part of the remaining portion of the anterior columns, the posterior columns, and the direct cerebellar tract are normal. The crossed-pyramidal tracts, particularly the left, exhibit hypertrophy of the neuroglia and septa, distinguishable from sclerosis of chronic myelitis by the absence of Deiters' cells and induration of the neuroglia and septa. The neural elements are in a fair state of preservation, and the decided vascular changes seen in the compressed portion are absent. The gray matter, with the exception of increased vascularity, is normal. In other words, the changes are limited to the crossed-pyramidal tract, except when they involve the anterior portion of the left lateral column, or most abnormal side. The outline of the direct cerebellar tract is as distinct in the specimen as represented in Fig. 3, and the asymmetry in the anterior horns is correctly represented.

Fig. 1.—Transverse section of cord in the superior cervical region, compressed portion. Right side represents left half of cord.

Fig. 2.—A portion of the column of Burdach, adjoining posterior commissure, showing hypertrophied artery. No. 6 Vérick, Obj., No. 3, *a*.

Fig. 3.—Transverse section of cord in middle cervical region, below compressed portion. Right side represents left half of cord.

CASE II.—CASEOUS OSTITIS AT THE OCCIPITO-ATLOID ARTICULATION AND OF THE BODY AND ODONTOID PROCESS OF THE ATLAS.

This case has been used in a paper by Dr. Yale[1] to illustrate disease in the upper cervical vertebra, and the notes I then furnished him are reproduced in this communication. It furnishes such excellent specimens of myelitis of the anterior horns that I have reserved the cord and the drawings for a future report. The gross appearances are well represented in the drawing made by Dr. Amidon. [Fig. 1.]

The history is as follows:

January 19, 1880.—For at least a week the patient, a male, *æt.* 15, has had a stiff neck, which is thought to have come from a cold. Later, it was discovered that a week before the appearance of the symptoms he had fallen backward, striking his head against the floor with considerable force. Liniments ineffectual. No infiltration; tenderness along ligamentum nuchæ; blister to nape.

January 21.—No relief from blister. Ergot ʒss., t.i.d. No appreciable rise in temperature; pulse and respiration normal. Keeps bed simply from holding head erect.

January 22.—Ergot not retained.

January 26.—Still unrelieved. In fact there now appears to be a subacute cellulitis, probably involving the cervical fascia. No enlargement of vertebræ to be felt in the fauces; and no prominence to be felt posteriorly, and, indeed, a careful examination fails to detect any vertebral disease.

January 28.—Belladonna lotion. Ergot again, not borne; followed by a blister.

On February 8, the entry is continued: "No material change. * * * * Can this be a case of pachymeningitis cervicalis hypertrophica, with extension of disease along

[1] Medical Record, Nov. 13, 1880, p. 553.

nerve sheaths, causing a peripachymeningitis, or is it simply a rheumatic form of an inflammation affecting cervical fascia?"

February 9.—On right side, just back of the mastoid process, is a tumor barely perceptible.

February 10.—Spinal brace and head spring applied. Is now out of bed.

February 15.—Gets much support from the head spring, but dislikes the body brace very much. Tumor enlarging slowly. Some tenderness.

March 30.—Incision made an inch deep before pus is reached. Leech and poultice. Temperature, 103°.

March 31, A. M.—In an attempt to enlarge the opening, a branch of the occipital artery (probably the princeps cervicis) is divided and at least a half ounce of blood lost. Compress proves effectual; brandy freely administered. Temperature, P. M., 103°.

April 2.—Discharge very slight. He suffers so much that he begs to sleep in his rolling-chair, the pain on lying down being excessive.

April 5.—A probe inserted fully two inches into the sinus touches bare bone, and with this instrument passed three times daily the deep parts are kept open. He complains of great pain in the neck on the left side, but nothing more than glandular enlargement can here be discovered.

April 9.—Pains so great as to require the constant use of iced cloths. The patient dislikes morphia, and potassium bromide in forty grain doses is employed instead.

April 11.—Delirium, due apparently to the extreme degree of anæmia. The discharge is more free and he looks every way better.

April 17.—Under hot fomentation he seems to get relief from pain. Complains of difficulty in breathing, of soreness of the throat, and for a week or two he has been unable to

take solid food; takes liquid food even with a tube. Breathes heavily in sleep.

April 19.—Complains this morning of being unable to breathe through his nose, and an examination reveals a post-pharyngeal abscess. A bistoury is promptly inserted and fully two ounces of pus evacuated. The pus is thick, and towards the end about a drachm of caseous material like bone detritus flows out of the incision. The sac is washed with a weak solution of acid carbolic, and the dyspnoea is immediately arrested.

April 22.—No discharge from the mastoid abscess and the tumefaction greatly diminished. The fomentations are discontinued, and by 10 P. M. there is great increase in size of the tumor.

May 2.—He is simply vegetating, is growing more and more emaciated, and while the discharge is thin and less profuse the tenderness of the parts is as great.

May 3.—By reason of his loss of flesh, it is next to impossible to fit any form of apparatus that will be at all comfortable. His position in the chair is a painful one; yet he dreads going to bed, and much against his will he is placed in the dorsal decubitus, all apparatus being removed. He asks to be turned on his side, and as this is done he screams aloud, and the agony is so great that his eyes seem to start from their sockets. The extreme helplessness of the limbs becomes very noticeable. After awhile he gets into an easy position and he lies with little suffering until 4 P. M., when his speech becomes difficult; he faints away, and then rallies a little under stimulants.

At 5 P. M. the nurse reports that he attempted to turn his head and raise himself from the pillow, when he suddenly became deathly pale; the respiration ceased, and on reaching his bed a few moments later I found life nearly extinct. He was lying on his back, chin on sternum. After a few pulse

beats and gasps he died. After death I explored the pharynx with my finger, finding the sac of the abscess empty and the glottis clear.

Autopsy, twenty hours after death, Dr. E. G. Janeway superintending. Present: Dr. Poore and the house staff. Thorax and abdomen not examined. Spinal canal exposed by sawing through the arches and removing the spinous processes throughout the whole length. The cord is carefully removed. No evidence found at any point of meningitis, acute or chronic; no tubercles; in the upper portion of the cervical region, anteriorly, the dura was a little thickened, due, perhaps, to an old pachymeningitis externa. Sections of the cord made in the lumbar enlargement, and all that could be discovered microscopically is a cloudiness of the gray horns anteriorly, with a diminution in their size. This condition exists apparently throughout the whole of the lumbar portion. There are, however, no very marked changes discovered. The cephalo-rachidian fluid normal in quantity and appearance. The bodies of the vertebræ are carefully examined from behind, and no evidence of caries found. As the mastoid abscess is enlarged and explored with the finger there can be felt one or two bits of rough, hard bone, probably separated by saw and chisel. The condyles of the occiput are felt bare and eroded.

The dura of the calvarium is found very firmly adherent. On removing the cephalic mass nothing abnormal is encountered until the medulla is reached. Against its anterior surface, just below the decussation, a bony process is found projecting, which proves to be the odontoid. After removal of the brain quite a depression is recognized in the medulla at its junction with the cord.

On flexing the head upon the spine, the odontoid can be seen plainly moving backward and forward. On inserting finger into the foramen magnum there is felt, toward the

right side, a small bit of eroded bone, found to be the point of insertion of the check ligaments, both these and the transverse ligament being, to all appearance, separated by disease of the bones at their attachments, thus allowing the displacement described. The mastoid process seems normal.

THE WALSH CASE.

BY

A. H. P. LEUF, M. D.

The case of James F. Walsh, of Brooklyn, who murdered Barbara Gronenthal on the evening of January 3, 1881, has had drawn to it much well-deserved attention, if for no other reason than that the murderer was only a boy when he committed the act. His age was somewhat over seventeen years and ten months. The deed was not denied. The defence urged the plea of temporary epileptic insanity, and their witnesses were all unanimous on the point of his having acted "peculiarly" at times, while the witnesses of the prosecution persistently maintained that his conduct had always been most common-place. The defence also attempted to prove that the prisoner had inherited epilepsy from his father.

I have made the following extracts of all the testimony bearing on the medical aspect of the case. I was enabled to do so through the kindness of Dr. A. Warner Shepard, the County Physician of Kings County, who obtained for my examination a printed record of the trial, through the courtesy of General Isaac S. Catlin, the District Attorney.

A Catholic priest, who had known the Walsh family for several years, testified as follows:

He had seen the prisoner's father in three fits. They were "regular convulsions," and during them he would foam at the mouth. The father drowned himself thirteen years ago. The first fit he saw him in was between two and three years before his death (*i. e.*, when the prisoner was between five and six years of age).

A married sister then testified to the following:

The prisoner, since his seventh year, had often sat gloomily for hours at a time, with his elbows on his quivering knees, and his head resting upon his hands. The father had been similarly affected. During the last two years the prisoner had also complained of a light sensation in his head, and a feeling as if he could not see, and did not know what he was doing. Ordinary drug store remedies never relieved him. During the attacks he wished for death, and had several times threatened suicide. The sun made his head feel badly; he sometimes also complained of fever. During the week preceding the murder he complained much of his head, and would walk the floor excitedly for an hour and a half at a time. On the morning of the murder he was very gloomy and restless. Complained a great deal of his head, but only when questioned about his conduct. He was "very wild looking." He spent almost all the afternoon sitting gloomily, with his elbows on his knees and his chin resting in his hands. He was forced against his will to lie down on the lounge, but remained there for a few minutes only; then rose and walked the room quickly, "like a mad man," his limbs at the same time quivering all over, and getting worse, until he could not stand any longer. He then laid upon the lounge, all the while muttering to himself, without any cessation of the quivering. When spoken to, he said he was "going crazy." He left the house in the same condition and very much excited.

The prisoner had a brother who was confined at Sing Sing, and upon returning from a visit to this relative, he told the witness (his sister) that he had resolved to drown himself when he left his brother, but changed his mind at the last moment. The same witness also said that the father did not begin to have fits until *after* he was hurt by falling down a mine. He died four years thereafter.

The evidence of the prisoner's mother was as follows:

The father of the prisoner (her husband) had had fits at irregular intervals, from two or three a week to two or three a day. He had them for *twenty-four years*. His falling down the shaft of a mine was due to his having a fit, as his fellow-workmen told her at the time. After a fit he appeared not to know what he was saying or doing, and sometimes he would tear his clothes off. He had even broken a chair or a looking-glass while in such a condition.

The mother testified substantially the same as the sister about the prisoner's peculiar behavior, and said that she emptied a dipper of water on his head every morning before he went to work.

She also gave a history of his having fallen on his head from a stoop when he was five years of age. He had a bruise on his head thereafter for over a month. For the last half-year he had frequently asked her if she could get along without him, and then told her that he might be drowned some day. On the morning of the murder he ate nothing at breakfast, and suddenly jumped up and left with his lunch. He returned home at 12:30 and changed his clothes, walked the room for fifteen minutes and then left. He came home again at dusk, asked for coffee, sat down to it, did not touch it, walked the room for ten minutes, and then left, saying that he was going to take a walk. Was not seen again until after the murder.

The brother of the prisoner testified that lately he had several times seen James sitting up in bed at night, holding his hands to his head and moaning. When spoken to at the time he would not answer. If addressed at other times he would not reply, or say it was his head.

The question to decide is, whether Walsh was insane at the time of the deed, or not. This it is impossible to do from the means at our disposal; but it may be of interest to dwell cursorily upon the matter.

The testimony indicating cerebral derangement consists in his having fallen from a stoop when five years of age, and having retained a scalp bruise from this accident for over a month; his having been subject to occasional fits of gloominess, associated with severe pains in the head, which grew worse when he was exposed to the sun, and which the ordinary remedies of an apothecary always failed to relieve. These attacks would continue for hours at a time, and sometimes last a whole day. During the attacks he would always drop his head forward on his chest when walking, or support it between his hands when sitting, and at the same time rest his elbows on his knees, that are said to have quivered.

At these times he would not speak unless first addressed. Either during or after these attacks he would have a sensation of lightness in the head, partial loss of sight, and a feeling as though he knew not what he was doing. At the same time he would have suicidal ideas, and had mentioned them on several occasions.[1]

There were occasional attacks of fever. During the week preceding the murder these symptoms were much exaggerated and his condition very excitable. On the day of the murder he thought he was going crazy. During the last six months he had often asked his mother if she could get along without him, and told her that he would one day be brought home drowned. He had often asked which was the easiest death, and had always been told that the one by drowning was. For a short time before the murder he was sometimes seen sitting up in bed at midnight, with his head between his hands, and moaning, and when spoken to he would not answer, but if asked about it the next day, he would say it was due to his head.

The grounds upon which the prosecution based their plea of the prisoner's sanity was that the testimony for the defence was largely false, and that the murder was committed with forethought. Thus, he had the knife with which he did the deed sharpened on the morning of the murder, and wrote the words: "James F. Walsh, Jan. 3, 1881. Goodbye forever," on one door, and on another: "We part to meet in heaven." His fellow workmen had never noticed anything unusual about him, and stated that his behavior had at all times seemed most common-place. At one time, however, he showed considerable temper, during a dispute, in striking a fellow-workman to the floor with a weight. On

[1] The father was subject to similar attacks, but the length of time was not stated during which he was thus afflicted.

the morning of the murder he asked a couple of his shopmates to show him the location of the heart, which was done. Although he was in the shop all the morning, he did not return to work in the afternoon.

There can be no doubt that the prisoner's father had epilepsy, but it is impossible to certainly decide as to the length of time that he might have been subject to epileptic attacks. Thus, while the sister of the prisoner says positively that her father had the attacks only *after* his fall down the mine, the mother, with equal positiveness, asserts that he was subject to them for the *last twenty-five years* of his life. It is certainly true that the testimony of the mother of the prisoner should be considered as having more value on this point than that of his sister; but one instance at the trial is sufficient to prove that the assertions of the former are no more reliable than those of the latter, if as much so.

The death of the prisoner's father was by drowning. When the inquest was held it was generally supposed that he had committed suicide. The mother of the prisoner was present at the inquest, and was examined by the Coroner. This was twelve or thirteen years before the murder, and this same woman, when asked at the trial of her son if she had made certain statements before the coroner at the time of her husband's death, claimed to have no recollection of the matter, and even said she did not know whether she was at the inquest or not, or whether there had been an inquest, and did not know of seeing or having ever spoken to the coroner! If she told the truth, then her memory must indeed have been very poor, and her testimony was utterly worthless compared with her daughter's, in reference to the length of time her husband had been subject to "fits." If she lied, her testimony was equally valueless. It is true that at the time of the mine accident the sister could have been no more than nine or ten years of age, but a well-founded doubt still re-

mains as to the duration of the fits of the prisoner's father, and it may fairly, but not certainly, be assumed that the mother spoke falsely in the hope of aiding her son, while the sister, perhaps less knowing, less mindful of what was to be her brother's fate, or more scrupulous, told the truth. If, then, as it seems to me most reasonable to suppose, the father had no epilepsy until after his fall down the mine, and consequently after the prisoner was five years of age, it was impossible for the latter to inherit epilepsy from the former; but if the father's epileptic outbreak was due to a traumatic cause, it is also most reasonable to suppose that he was epileptically predisposed, and, this being the case, it is obvious that the parent may have transmitted the epileptic predisposition to the prisoner. And this seems almost a certainty upon a careful and considerate perusal of the preceding summary of the prisoner's symptoms during his life, especially when we recollect that these symptoms did not manifest themselves until a year or so after his fall down the steps, and the long-lasting scalp bruise resulting therefrom.

The prisoner only threatened suicide during the cerebral paroxysms he was subject to. He had determined on two occasions to carry out his threats. The first of these was several months before the murder when he visited his convict brother at Sing Sing. The second was on the night of the eventful deed. Thus, soon after having committed the murder, he jumped off the Penny Bridge into the Gowanus Canal, which at the time (January 3) was full of ice; but no sooner did he strike the water than he repented, and grasped the abutment of the bridge, and called loudly for help, until the conductor of a crossing car came to his assistance, and with the aid of several men dragged him out. His arms, shoulders and head were perfectly dry. Is not this last fact strikingly suggestive of unconscious cerebration, rather than

of conscious mental action? How quick, in fact almost spasmodic, must have been his movements to have enabled him, in his vertical fall, to catch hold of something before he sank deeper; and a plunge into ice-cold water on a dark night, in a lonely and dismal place, is beyond a doubt as revulsant to an insane as to a sane person. After being rescued from the water and brought to an apothecary's he spoke for the first time since the murder, and that very little; but what he did say showed plainly how bitter was his repentance for what he had done; how eager he was to be forgiven by his victim. He sobbed and moaned continually.

Most of the prisoner's symptoms during the last few months of his life may be explained in a number of ways. Thus, he may have considered suicide after having seen his brother at Sing Sing, because of the fact that his brother was a convict made it possible that the girl he loved would refuse to marry him; but were this so, only an unbalanced mind would cause a person to think of such a step. It may have been shame at the disgrace; still, this would not lead a sane man to commit suicide; or it might have been during one of the spells of "head trouble" he was subject to, aggravated by the above-mentioned two causes; and this latter is the most reasonable supposition. The suicidal attempt on the night of the murder admits of a similar explanation. There certainly are other ways of explaining this conduct of the prisoner, such as fear, remorse, or great depression of spirits; but instead of either or all of these being supposed to be the sole cause of his actions, it is much more rational to look upon them as accessory causes of a chronic periodical mental derangement. During the week preceding the murder his symptoms grew worse. There can hardly be a reasonable doubt that he was meditating the murder at this time, and that this would, in a person of his age and condition, al-

most necessarily entail just such a train of actions as were seen. A strong stand may be taken on the ground that Walsh's behavior at this time was perfectly in accordance with what would be expected of a boy of seventeen for the first time in love with a girl of sixteen, whom he was afraid of losing, and whom he suspected of playing with his affections, perhaps loving another more. It is easy to think how murder might slowly creep into his mind, then gradually take a firm hold; how during all this time the unhappy prisoner would be overburdened with his fearful secret and the thoughts of its result to himself and his victim. It may with equal fairness be claimed that there was even less strangeness in his still greater excitability on the day of the deed. But while this would be a very fair conclusion, in case the prisoner had always possessed a good mind and nervous system, it is equally unfair, in fact much more so, to refuse to look upon it from the other side. As the medical witness (Dr. J. C. Shaw) unhesitatingly said at the trial, the prisoner had an undoubted abnormal condition of the nervous system. There is very good reason to believe that this was of epileptic character. Then, from what we know of epilepsy and its relation to periodical mental derangements, and in view of the fact that to anyone standing in a criminal light both morally and legally belongs the benefit of the doubt, it is more rational and most just to look upon the cause of this murder as originating in a more or less deranged mind, stirred up to action by envy, jealousy, fear, hatred and despair.

In reference to his having been seen sitting up in bed at night moaning, and with his hands to his head, it must be said that a young lover premeditating the murder of the one he loved might naturally act so. In the solitude of the night thought is most vivid, and whatever seems dark and horrible at any time, appears most so then.

In view of the foregoing facts, however, it is necessary to go back to the mental condition of the prisoner; and when we associate his nervous malady with these nocturnal feelings, it seems to my mind that the most consistent and justifiable supposition is that his faulty cerebration, rendered more so by these other circumstances, was the agent robbing him of sleep.

That Walsh psychologically could not help doing what he did, and that he was morally irresponsible, I have no doubt; but that he was legally irresponsible I certainly cannot see, for I think that there is most reason to believe that he fully appreciated what he was doing, that he never forgot the penalty the law imposed for willful murder. During almost the whole of his eighteen months' confinement in the jail he simulated suffering from his head, and almost always had it enveloped with a cloth. He took hardly any of the medicine that was given to him during that time, but made it a practice to throw it all away. When his last chance for a reprieve or pardon from the Governor had fled, he complained of sickness no more, but took the cloth off his head, and restricted his intercourse almost entirely to the priests. It is said that the dissimulation practised by the prisoner was so evident that the most ignorant and least observant of the jail wardens detected and remarked it.

To Doctor A. Warner Shepard is due the credit of having secured a scientific autopsy in this case. Dr. Landon Carter Gray was to have made the autopsy and examined the brain, but, being out of town at the time, he was unable to do so. Dr. Shepard, having attended the prisoner during his imprisonment, thought it best that he should not himself make the autopsy. Dr. B. F. Westbrook made the *post-mortem* examination and removed the brain, which was examined by Dr. E. C. Spitzka. Prof. E. S. Bunker at-

tended the autopsy upon invitation from Dr. Shepard, while to myself was relegated the task of note-taking. The following is a correct account of the details as noted down at the time from the statements of Drs. Spitzka and Westbrook:

Autopsy.—Male, aged 19 years and 5 months; tall; born in the U. S.; single; prisoner for 18 months. There was no rigor mortis. Build spare; weight 54 kilogrammes; sallow complexion; skin very pale; *post-mortem* lividity gradually setting in; average and equal degree of dilation of both pupils. Contour irregular. Slight fresh seminal discharge upon the shirt front. Both ears were very livid.

Scalp.—All back of the vertex was full of blood, while the rest was anæmic. It was also tough.

Cranium.—The right half *seems* larger than the left. There is a prominent ridge in the region of the frontal suture, traces of which remain just above the root of the nose. The appearance of asymmetry was probably due to turgescence of the scalp, as the calvarium showed no asymmetry.

The dura was normally adherent to the cerebral convexity. Pacchionian bodies were found in the usual position and very moderate in number. A large amount of very dark fluid blood ran freely from the longitudinal sinus. The veins of the dura were moderately congested with fluid blood. Dark soft gelatinous clots were found in the lateral sinuses. The arachnoid was perfectly clear, and the pia firm, all the membranes and vessels externally were perfectly normal. The cerebro-spinal fluid of the basilar arachnoid spaces was normal in amount, and clear. Much of the fluid appeared to be from the spinal canal. The internal carotids were empty.

The Brain.—The nerves were firm, and normal in color. The pons Varolii was excavated to an unusual depth for the basilar artery. The Island of Reil was fully covered on each side. The root of the Island was so deeply concealed that the middle cerebral artery seemed to pass through a foramen; this was so on both sides. The Island, on each side, had five (5) fissures and six (6) gyri. All the basilar parts of the brain were present and normal. The splenius of the corpus callosum was of normal thickness. The fluid of the lateral ventricles was slightly tinged with blood. The staining of the ventricular fluid could be distinctly seen, and proceeded from the vessels of the choroid plexuses, of

which the arteries were empty but the veins full of blood. The vessels of the velum interpositum were normal in all respects. A single white strand, 3 c.m. long, ran longitudinally across the anterior extremity of the intra-ventricular surface of the right corpus striatum. The posterior cornu of the same side reached to within 4 c.m. of the occipital lobe. The descending cornu of the same side was normal in capacity and extent, as was also the anterior cornu. The left hemisphere weighed 677.0898 grammes (21 ounces 6 drachms), and the right hemisphere weighed 666.56 grammes (21 ounces and 3½ drachms). This asymmetry is nearer the rule than perfect symmetry would be. The isthmus and cerebellum, including the thalami optici, weighed 233.3878 grammes (7 ounces and 4 drachms). The cerebellum alone weighed 163.4258 grammes (5 ounces and 2 drachms), leaving 69.962 grammes (2 ounces and 2 drachms) for the weight of the isthmus, including the thalami optici. The total weight of the whole brain was 1577.0376 grammes (50 ounces and 5½ drachms). All the parts weighed were invested by the arachnoid and pia, but not the dura; the cerebellar lobes were of normal disposition. There was no congestion of the calamus scriptorius. The arteries of the choroid plexus of the fourth ventricle were empty, but the cerebellar veins were full. The brain showed an average degree of folding.

On the right side the cuneate gyrus was concealed, being normal. The inter-parietal fissure was interrupted by the ordinary bridge joining the superior and inferior parietal lobules. The fissure of Rolando was of normal depth, and reached to within 1.5 c. m. of the fissure of Sylvius. It was separated from the median edge of the hemisphere by a very thin bridge. The frontal lobe was of the three convolution type, *i. e.*, 1st, 2d and 3d. The middle, 2d, was broken up by numerous transverse foldings. In the occipital lobe the notch of the occipito-parietal sulcus cut into the hemispheric edge about 2 c. m. The external occipital fissure was well indicated, but interrupted. The others took the typical course. The orbital sulcus was straight, antero-posteriorly, with four confluent branches, the fifth and sixth not touching it.

On the left side the frontal gyri are of the same type as those of the right side. The orbital sulcus is short and oblique, with five confluent branches and one distant one. The interrupting gyrus of the inter-parietal dips a little. The occipital lobe has the same disposition as that of the right side.

The cuneate gyrus, paracentral lobe, cuneus and precuneus were symmetrical. There were no anomalies of any kind. The layers of the cortex showed very distinctly. The puncta vasculosa were very few, and all of a venous character. It was also observed that blood drops did not diffuse as rapidly in the tissues as in brains examined at the usual time after death, and that it was easier to clean the blood surfaces than in such. The ventricular ependyma was normal throughout. The claustrum was also very thin all over. As far as the eye could see all was structurally normal.

The cortical layers of the internal face of the occipital lobe were no more distinctly marked than in brains examined after the usual *post-mortem* length of time ; but their distinctness was greatest in the frontal and parietal regions. It would seem that this was due to the greater transparency of the basis-substance, permitting the pigment-carrying cells to give a more distinctly bluish-gray tinge to the ganglionic layers, the rest appearing translucent and pale. The consistence of the brain was that ordinarily found in autopsies made in cold weather. The auditory striae were few in number and well marked ; there was an ascending detached fasciculus. The spinal cord was not examined. The thyroid cartilage was fractured, but the hyoid bone was not. The strangulation mark was livid, red, dry, and about 2 c.m. wide. It was fully 1.5 c.m. deep as it passed across the middle of the right sterno-cleidomastoid, which was ruptured at that point. The groove was only half as deep on the other side where the muscle was not ruptured.

The Thoracico-abdominal Cavity.—There were adhesions of the apices of both lungs. They were also gorged with venous blood. The heart had stopped in systole. The left ventricle was contracted and empty, and the left auricle contained a very small amount of blood while the pulmonary veins were empty. The right ventricle contained much black fluid blood. The right auricle was distended to its utmost capacity with the same. The pulmonary artery and its branches were also very full of the same. All the abdominal viscera were also of the darkest hue from venous blood. The abdominal veins were similarly gorged. The aorta contained a little fluid blood. Both kidneys were of the floating type, the left more so than the right. The brain and part of each lung were put in a ten per cent. solution of bichromate of potassium for microscopic examination, which will be made by Dr. L. C. Gray.

It is interesting to note that the hyoid bone was not fractured in this case, although the thyroid cartilage was. Dr. Hamilton, in his book on "Fractures and Dislocations," claims that the former is *never* fractured in death by hanging. I have, however, seen three such cases of fracture produced in the manner indicated. They were subjects in the dissecting-room of the Long Island College Hospital. Two died by voluntary hanging, and the hyoid in each was broken. The third case had its hyoid fractured by *post-mortem* hanging.

There is a statement in the *Medical Record* of April 22, 1882, to the effect that Hoffmann believes that rupture of the sterno-cleido-mastoid, in cases of hanging, is not due to laceration by the rope, but to the *post-mortem* stiffening of the muscle (rigor mortis). It will be recollected that the body of Walsh was examined in less than one-half hour after death. There was no rigor mortis, and Dr. B. F. Westbrook found the right sterno-cleido-mastoid very distinctly ruptured. This is proof that Hoffmann's supposition is not the correct one in all instances. I have seen another case (suicidal) at the City Morgue of Brooklyn, but in this instance the autopsy was not made until rigor mortis was very pronounced. There was no fracture of the hyoid or thyroid, but the right sterno-cleido-mastoid was ruptured. In this case and in Walsh the rupture was opposite the slip-knot of the noose. This point I did not notice in the dissecting-room subjects.

I would ask, Is the laceration, as a rule, unilateral, and if so, is it opposite the slip-knot, or on the same side, or is there no marked difference? In cases in which the laceration is bilateral, is the laceration greatest on the side opposite the knot, or on the same side? A correct answer to these questions would greatly aid in settling the question raised by Hoffmann.

TWO CASES OF STRETCHING OF FACIAL NERVE.

BY

LANDON CARTER GRAY, M. D.

CASE I.—Swede, aged 36; engineer by trade; muscular, healthy, of large frame. Had had very painful tic-douloureux of second branch of right trigeminus for 16 years. A significant fact to me was that, at the very outset of the disease, muscular twitchings along the line of the lower jaw had preceded the pain for several months, and the painful attacks themselves, throughout the affection, were always ushered in by a distinct interval of this same twitching. I was, therefore, curious to see what effect the stretching of the facial would have upon the symptoms; and, explaining matters to my patient, I obtained his consent to an operation upon the facial, which, if not successful, was to be followed by a similar one upon the trigeminus. On the 8th of May last, then, assisted by Drs. Frank W. Rockwell, Benj. F. Westbrook, A. H. P. Leuf and Mr. Buckmaster, of Brooklyn, and Dr. Wm. L. Hardy, of New York, I cut down on the right facial nerve, laid it bare as it runs across from the stylo-mastoid foramen to the parotid gland, and stretched it so forcibly several times that the head was rolled from side to side. I employed a modified "Listerism" throughout the operation, to the extent of using carbolized solutions freely, sponges that had been carbolized carefully, carbolized cat-gut for sutures, etc. The edges of the wound were carefully coapted, carbolized silk laid over them, and over this a pad of carbolized gauze.

The next day there was a typical Bell's palsy upon that side of the face. On the fourth day the dressings were removed, and it was seen that union by the first intention had been obtained. For four days after the operation there was absolute relief from pain, although some slight twitching persisted. On the fourth day the pain returned, quickly becoming much more intense than before the operation, and had remained so up till the early part of September, since when I have not seen the patient. Singular to say, however, the twitchings greatly diminished. The motor paralysis remained, but was steadily improving. Typical reaction of degeneration was present (entartungsreaction). The patient became so discouraged that he would not submit to the trigeminal operation.

CASE II.—Male, aged 22, American. Had for ten years had choreiform movements of both sides of face and of both hands. They were sufficiently strong to cause constant grimaces, and to render the upper extremities useless for skilled handiwork. On June 16, 1882, assisted by Drs. Benjamin F. Westbrook, Frank W. Rockwell and A. H. P. Leuf, I stretched the right facial as in the first case, employing the same modified "Listerism," and in like manner coaptating the wound, and making use of Listerian dressings. On the fourth day the dressings were removed, and perfect union by the first intention found. A paralysis of the face also ensued in this case, with the electrical signs of degeneration. The operation was entirely successful until the latter part of August, there being absolute cessation of the twitching on both sides of the face; but at that time the movements returned with pristine activity. I have not seen the patient since.

I have not found the operation upon the facial nerve a dangerous one, but it was difficult to isolate the nerve, as

it lies deeply in a small cavity that is not readily illuminated, even by a laryngscopic head-mirror. I have proceeded thus in my patients: The mastoid process is felt for and maintained as a guide. Commencing about an inch posteriorly to this, a curved incision is carried along, close to the cartilage of the ear, to about an inch anteriorly to this mastoid process. Another incision is carried downward from this first one, along the anterior border of the sterno-cleido-mastoid muscle. These incisions should be carried through the fasciæ. Closely hugging the anterior surface of the mastoid process, the handle of a scalpel is used to break up the areolar tissue, until the little finger, inserted into the cavity thus made, can touch the base of the skull; in my two cases, the styloid process was felt, near which, through the stylo-mastoid foramen, the nerve issues. The cavity must then be enlarged sufficiently to catch sight of the nerve; but, after the preliminary incisions, I have been exceedingly careful to use a blunt-edged instrument, like the scalpel handle, unless a further incision became necessary. When found, the nerve is encircled by a hook, and well stretched. It is then carefully returned to its place, all bleeding stopped, all clots removed, the edges of the wound accurately brought together, and the dressings applied as described. The patient is then directed to move the head and jaws as little as possible, and for the first twenty-four hours the food is such as does not require mastication. In the two operations I only had occasion to tie one small venous twig; and I cannot understand how a free hemorrhage need occur, such as happened to one of the German operators.

A CASE OF ATHETOSIS CURED BY NERVE STRETCHING.[1]

BY

GRÆME W. HAMMOND, M. D.,

Physician to the Department for Diseases of the Nervous System, in the Metropolitan Throat Hospital.

For the last ten years nerve stretching has been resorted to with more or less success, in almost all spinal and cerebral diseases in which there was the slightest possibility of a cure being effected. The results of these repeated operations have been, as a rule, very unsatisfactory in nearly all cases where the disease has been traced to any organic change in the central nervous system.

Athetosis, according to the *post-mortem* examinations made on those who have died while suffering from this complaint, comes within this classification, and up to the present time, after almost all kinds of experiments have repeatedly failed, it is universally looked upon as an incurable disease.

So far as I am aware, only one operation for the relief of this disease has been performed prior to my own. This was done by Dr. W. J. Morton, at the Metropolitan Throat Hospital. Dr. Morton stretched the median, ulnar and musculo-spiral nerves. The result of the operation was an entire cessation of the athetoic movements, but both the forearm and hand were paralyzed and the hand was flexed upon the wrist.

It seems probable, judging from the results obtained in

[1] Read before the American Neurological Association, June 21, 1882.

the case I present before you this afternoon, that had less force been exerted on the nerves in Dr. Morton's patient, the alleviation of the athetosis would not have been accompanied by paralysis and contraction.

Dr. W. A. Hammond, on May 23, 1882, sent me his original case of athetosis, recommending that one or more of the nerves in the arm should be stretched.

It was this case, coming under Dr. Hammond's observation in the year 1869, which led him to give the first description of this disease.[1] The history of the case, which I have abstracted from Dr. Hammond's work on Diseases of the Nervous System, is as follows: "In the year 1860 the patient had an epileptic paroxysm. In 1865 he had an attack of delirium tremens, and for six weeks thereafter was unconscious. Soon after recovering his intelligence he noticed a slight sensation of numbness in the whole of the right upper extremity, and in the toes of the same side. At the same time severe pain appeared in these parts, and complex involuntary movements ensued in the fingers and toes of the same side. At first the movements of the fingers were to some extent under the control of the will. The right forearm, from the continual action of the muscles, was much larger than the other, and the muscles were hard and developed like those of a gymnast.

"When told to close the hand, he held it out at arm's length, clasped the wrist with the other hand, and then, exerting all his power, succeeded, after at least half a minute, in flexing the fingers, but instantly they opened again and resumed their movements.

"When he succeeds in arresting the movements of the hand, the little finger at once becomes strongly abducted, the third finger participates to some extent, the second fin-

[1] This patient has been presented to numerous clinics and societies, and two or three years ago was brought before you at a meeting of this Association.

ger is slightly flexed, the index finger is extended, and the thumb is extended to its very utmost." This condition is well illustrated in the wood-cut which I now pass around for your observation.

Up to the time of the operation the movements in the hand continued with scarcely an instant's cessation, both day and night, interfering with his sleep and, consequently, with his general health. His epileptic attacks increased in frequency until he had as many as six or seven a week. I concluded to operate only on one nerve at first, and then, if the operation was followed by any amelioration of his symptoms, to perform a similar operation on the other nerves. With this end in view I determined to stretch the median nerve first.

On May 27, 1882, at the Metropolitan Throat Hospital, and with the assistance of Dr. R.T. Osborne, I stretched the median nerve in the middle of the arm, at the inner edge of the biceps muscle. After separating the nerve from the artery, gentle traction was employed in both an upward and downward direction, stretching the nerve, which seemed very elastic, probably not more than half an inch. Immediately after the operation was performed, and as soon as the patient had recovered from the influence of the anæsthetic, I asked him to extend his fingers and retain them in that position if possible. He did so with the greatest ease, and found no difficulty, not only in keeping them extended, but in placing them in any position he desired, and for as long a time as he wished. The pain in the arm was entirely relieved, but the pain in the ring and middle fingers had increased. This pain has since been relieved by static and faradaic electricity. The movements and pain in the foot had also ceased, and have not returned up to the present date. The patient has improved steadily, and each succeeding day sees him acquiring new power, and all the ad-

vantages derived therefrom in a member which has been worse than useless for the last twenty years. He is now able to dress himself, and even to guide his fingers in more delicate and complex movements, such as, for instance, the motions necessarily employed in writing.

Another interesting and remarkable effect of the operation is the influence which has been exerted upon the frequency and force of the epileptic paroxysms. Heretofore, as I have already observed, these seizures occurred as often as six or seven times a week, and were very severe in character. He says he has never had a warning of any kind, and the numerous scars on his body and the loss of his front teeth, caused by falling, tend to support this statement. Since the operation he has had but one attack, and that occurred on the eighth day. It did not last as long, nor was it as severe as formerly.

The question that will at once arise is: How are these remarkable results obtained? So far as we know, athetosis is caused only by lesions situated in the corpus striatum.

In all autopsies which have come under my observation, made on persons who have died while suffering from this disease, degenerative changes have been found in this organ.

In one case it was due to a cyst found in the posterior portion of the lenticular nucleus; in the second case the anterior portion of the same ganglion was found to have undergone softening, and in the third almost the entire corpus striatum was destroyed.

It would be the height of absurdity to suppose for an instant that any such degenerative processes, as those just referred to, could be removed by stretching a nerve in the arm, If this be accepted, the cure of athetosis by nerve stretching can only be accounted for in two ways—either the injured nerve must be rendered incapable of transmitting the athetoic impulses, which still continue to be generated in the

corpus striatum; or, the effect of stretching the nerve produces such a result in the diseased organ as to render the conception of athetoic impulses impossible. The latter theory seems to me more likely to be the correct one, as it is able to satisfactorily account for the cessation of the movements and pain in the foot which the former theory cannot do. As it is, however, I present the patient for your examination, showing that although the cause of his relief may be a matter of theory, yet the effects of that cause are wonderfully apparent.

EDITORIAL NOTES AND COMMENTS.

THE GUITEAU AUTOPSY.

II.

The publication of the official report, based on the microscopic examination of Guiteau's lungs and brain, closes the history of the remarkable events which culminated at Washington on the thirtieth of June. If the naked eye appearances justified the verdict that Guiteau had a diseased brain, and if the asymmetry of both skull and brain confirmed in a high degree the theory of those who considered the assassin to have been the sufferer from a congenital form of insanity, what shall we say of the bearing of the microscopic findings, with their extensive record of atrophy of the cortex, degeneration of the cerebral blood-vessels, degenerated remains of old blood extravasations, extensive pathological pigmentation and destruction of the nerve cells?

We have known as extensive lesions as those found in Guiteau's brain to have been actually metamorphosed into positive evidences of sanity by the pathologist-advocates of "experts" whom the demonstration of those lesions placed in the position of accessories to a judicial murder, because, forsooth, the frontal lobes were not alleged to have been affected![1]

[1] The Evidences of Insanity Discoverable in the Brains of Criminals and others whose Mental State has been Questioned, with some remarks on Expert Testimony and the Grappotte Case.—*American Journal of Neurology and Psychiatry, May*, 1882.

That door of evasion is, however, closed in the Guiteau case by the statement of Drs. E. O. Shakespeare and J. C. McConnell (who made the examination), that the first layer of the cortex of the frontal region seemed "thinned almost to nothing," and that the blood-vessels of this region presented marked appearances of degeneration, while cellular hyperplasia, morbid pigmentation of the nerve cells and alterations of the white substance were more marked here than elsewhere.

The report of the gentlemen to whom the microscopic examination had been entrusted was first published in the *Philadelphia Medical News*. Unfortunately, that periodical did not content itself with submitting this publication, and adding such comments within the limits of science, reason and truth, as naturally suggested themselves, but appended an editorial, in which the facts of the report are distorted, the verdicts of mental science overturned and logic set at utter defiance. The remarkable conclusion of this editorial, that Guiteau was "justly" hanged, suited the taste of the scribes of daily journals responsible for the lynch-sentiment developed during Guiteau's trial so well, that several of them actually published the conclusions of this biased and illogical editorial, and deceived the public by presenting them as the conclusions of the report. For this deception of the public the *Medical News*, which furnished this editorial to the daily journals before its own issue appeared, must be held, in the fullest meaning of the term, responsible. The general as well as the professional reader have been so thoroughly deceived by the manœuvre herein detailed that it becomes desirable for us at the outset to submit the original report in full, thus giving our readers an opportunity to judge correctly from the true facts, honestly rendered:

D. S. LAMB, M. D. :—

Sir—The committee of three whom you, with the assent of Rev. Dr. W. W. Hicks, requested to make a careful microscopical examination of sections from the brain, dura mater and lung of the late Charles J. Guiteau, and to report the conditions found to be present have completed their investigations, and have agreed upon the following report :

Thin sections, prepared by Dr. J. C. McConnell, of the Army Medical Museum, from the lung, dura mater and brain, were submitted to your committee for their inspection.

The committee regret that the preparations presented did not more completely represent the whole brain and its membranes.

The sections of lung were from the left upper lobe. Their appearances were common to miliary tubercle. Some of the minute nodules consisted of aggregations of recently formed miliary tubercles in which giant cells were quite distinct. Others contained older foci of similiar aggregations which had undergone corneous degeneration.

Considerable pigmentation of the pulmonary parenchyma, very like that of anthracosis, was also to be seen.

The sections of dura mater were from the region of the middle meningeal artery. They showed but few, if any, signs of inflammatory action, and there was not much thickening evident.

The brain sections comprised the following series, viz. :—Sections from two portions of the corpus striatum, marked respectively corpus striatum 1, corpus striatum 2, and sections from four portions of the gray matter of the convexity or cortex of the cerebrum, labeled respectively frontal region, convexity 1, convexity 2, convexity 3. Those from the frontal region were probably from the superior frontal convolution, while those marked convexity 1, 2 and 3, were cut respectively from the ascending frontal, the ascending parietal and the superior parietal convolutions bordering upon the median longitudinal fissure, but the committee were not informed from which hemisphere.

A close examination of these sections, under a high power of the microscope, revealed the lesions noted below :

Not a few of the blood vessels, particularly capillaries and venules, were decidedly abnormal. Their perivascular lymph spaces were often more or less completely filled with masses of yellowish brown pigment granules, which appeared to be the degenerated remains of old blood extravasations.

In areas very numerous but mainly limited to the gray or ganglionic substance, the capillary blood-vessels presented their walls in a state of granular degeneration. Sometimes these granules were limited within the endothelial cells, constituting the wall of the capillary, but often they were found for a considerable distance completely encircling the vessel.

The lumen of the blood-vessels was usually void of blood corpuscles, and was patulous. A small number of very minute recent hemorrhages were to be seen.

In the gray or ganglionic matter of these sections were quite numerous areas, in which alterations of the neuroglia and of the ganglionic nerve corpuscles were very plainly visible. In them the pericellular lymph spaces were much crowded with lymphoid elements. In some areas the whole space seemed to be occupied by collections of such cells, no trace of the neuroglia cell or nerve corpuscle remaining. Most frequently, however, neither the encompassed nerve corpuscle nor the neuroglia cell was destroyed. On the contrary, their nuclei and branched processes were generally distinct. Yet in many cases the body of the cells was extensively tinged with a yellowish brown pigment, and in a smaller number of cells the presence of well defined dark granules in the cell body was sufficient to mask entirely the nucleus, if any existed. Moreover, in the latter case the cell processes were sometimes much less numerous than normal, and the body of the cell was not so angular.

In these sections the neuroglia and nerve corpuscles were found to be in much the same condition as above noted.

In a general way it may be stated that the cellular hyperplasia or cell multiplication was more marked than in No. 1.

With respect to the lesions of the blood-vessels two departures from health were noteworthy. Instead of those lesions consisting of the remains, in the perivascular lymph spaces, of blood extravasations, as in the first sections examined, these spaces, at points along the course of the vessel, were often found crowded with lymphoid elements. In some instances these white cells were clustered closely around and adherent to the wall of the vessel upon its exterior, and often most abundantly aggregated in the immediate vicinity of a bifurcation. In others the cells were closely packed together upon the external wall of the perivascular lymph space and slightly infiltrated the adjacent neuroglia.

In the white fibrous nerve substance there were isolated bundles

of nerve fibres and collections of such bundles, easily distinguished from the others by the presence, in greatly increased numbers, of cell elements upon and between them. Under a high power of the microscope these elements were found to be outside the capillary blood-vessels, and to occupy the same relation to the nerve bundles and to the vessels, and to present the same general microscopic picture as that seen in longitudinal sections of the optic nerve in a descending optic neuritis.

The areas of diseased structures above mentioned were more or less diffusedly scattered among tissues in which nothing distinctly abnormal could be made out.

The first layer seemed to be thinned almost to nothing in spots at the convexity of the convolution. The depths corresponding to these spots were, perhaps, a little more hypercellular than other portions. In the second, fourth and fifth layers, especially in the two latter, the blood-vessels presented, in a marked degree, degenerations similar to those remarked in the corpus striatum.

In the second, fourth and fifth layers, the pericellular spaces, both of the neuroglia cells and of the ganglionic corpuscles, were more or less filled with lymphoid cells. In these layers some ganglion nerve cells were also quite freely pigmented. Sometimes one-half the body of the cell was densely packed with pigmented granules to such an extent as to veil the nucleus, but the latter as well as the enclosed nucleolus even then could generally be discerned, although with difficulty.

This cellular hyperplasia was much more marked in the fourth and fifth layers than elsewhere, and was pretty uniform throughout them, yet even here was an obvious tendency to distribution *en plaques*.

In the subjacent white nerve fibrous substance the vessels were also sometimes slightly altered, and a few examples of cellular hyperplasia along the nerve bundles, much as was described for the corpus striatum, were rarely seen.

But few recent hemorrhages were visible in the sections examined.

Numbers 1, 2, 3.—The same abnormal appearances were remarked in all these sections, varying only in degree. It is sufficient to state that they were usually identical with those noted in sections from the frontal region, the only difference worth mentioning being the fact that the areas in which the vessels offered a granular degeneration were much less numerous and extensive than in the frontal region.

In the foregoing report it is to be assumed that the structures not specially mentioned were found in a condition so nearly normal as to call for no remark.

It should be stated, however, that in these various brain sections numerous so-called minute vacuoles were found. Whether these forms were real cavities or were transparent, highly refracting bodies of a definite constitution which was not revealed by the method of preparation, the committee do not undertake to say. Neither do they, in view of the widespread difference of opinion among observers, feel warranted in expressing a positive opinion as to whether or not these so-called vacuoles are to be regarded as *post-mortem* changes.

As bearing somewhat against the assumption of a *post-mortem* origin for such appearances in general, the following facts, besides many other considerations, may be referred to:

First.—They are not constantly found in brains which have been obtained thirty-six or forty-eight hours after death, long after decomposition has set in.

Second.—They have not infrequently been found in brains of animals killed for the purpose of experiment, when the nervous tissue has been instantly subjected to the action of the most perfect preservative fluids.

Third.—They have been met with when the brain substance has been examined perfectly fresh.

Fourth.—If they are the result of *post-mortem* change, they should not be met with immediately after death, but should appear and increase in number as decomposition advances. Yet no such relation to the time of death and state of decomposition has been observed for them.

In estimating the significance of these vacuoles in Guiteau's brain it should be remembered that the specimens were obtained and submitted to the action of the preservative agents not more than five or six hours after death, an early period rarely possible with human subjects; that the microscope showed the elements of the brain well preserved in other respects; that in some brains examined forty-eight hours after death these appearances are absent, and in others they are often less numerous than they were found to be in this particular brain; finally, that they were associated with abnormal conditions of the blood-vessels and of the cellular elements of the brain.

In conclusion, your committee have no hesitation whatever in affirming the existence of unquestionable evidence of decided chronic disease of the minute blood-vessels in numerous minute diffused areas, accompanied by alterations of the cellular elements in the specimens of brain submitted for their examination. While the lesions found were most marked in the corpus striatum and in the frontal region of the cerebral cortex, yet they very diffusely pervaded all portions of the brain which the sections represented.

They are of the opinion that all of the lesions to be recognized in the sections placed in their hands have been pointed out in the foregoing report. They regret that it has not been possible to subject the tissues to all the tests which might determine the nature of the so-called vacuoles referred to beyond a peradventure.

They have not been called upon to pass upon the bearing the lesions found might have upon the state of the subject's mind, and, therefore, do not offer an opinion.

Respectfully submitted,

J. W. S. ARNOLD,
E. O. SHAKESPEARE,
J. C. McCONNELL."

The editorial of the Philadelphia *Medical News* merits no other commentary than naturally suggests itself on perusal, or a faithful comparison with the mis-quoted report, and with earlier editorials in the same journal. It contains the following :

"As the anatomical elements were, for the most part, in their usual form and position, although somewhat changed by pigmentation, by the presence of lymphoid cells, etc., and as there were only in the dura mater but doubtful evidences of any inflammatory action of a chronic type, we are led to the conclusion above expressed, that the changes revealed by the microscope, although, as stated in the report, chronic in type, are recent in origin. Such an amount of granular degeneration of the vessels as here described may be effected in the brief space of time in which such changes are wrought in acute phosphorous poisoning."

A morbid process, whose character distinctly points it out

as a chronic one, several of whose appearances are stated in the report to represent ancient lesions, is here twisted into a something "chronic in type" and "recent in origin." The reflection also suggests itself that cortical cells, which have been destroyed, cannot be either in their "usual form" or "position," and that "somewhat changed by pigmentation, by the presence of lymphoid cells, etc.," is as much as and more than the record of a large number of insane brains. When such remarkable gyrations in argument are resorted to we need not be surprised to find the Philadelphia *Medical News* utilizing the fact that the committee reported only on the (comparatively) normal portion of the dura submitted to them, and ignoring the patent and admitted fact that this membrane was thickened and adherent to the cranium elsewhere.

We never heard that there was any phosphorus poisoning in the case of Guiteau, and the meaning of the last clause above quoted would be obscure if its intent were not transparent to the same degree as that of the following passage:

"Quite apart from the time in which these structural changes have occurred is the question of their influence on the mental state. *As a marked degree of double optic neuritis may co-exist with preservation of quite sufficient acuteness of vision for all ordinary purposes, so considerable changes of the organic substratum may coincide with fairly good intellectual powers.* In the case of Guiteau some changes are discovered, on microscopical examination, but do they necessarily imply a degree of mental weakness incapable of distinguishing between right and wrong? We hold that they do not."

The next clause needs but to be placed in juxtaposition with the exact language of the report to reveal a procedure which has thus far been and we hope will ever remain unparalleled in medical journalism:

(*Editorial of Phila. Medical News.*)

"Furthermore, these changes are, we believe, *recent in origin*, therefore they hardly involve the question of his moral responsibility anterior and up to the commission of his crime. They constitute the *initial stage* of a malady which, in its fullest development, is known as dementia paralytica, or an allied disease, the early symptoms of which disorder correspond closely with the mental condition of Guiteau during the past year."

(*Report of Microscopic Committee in same Journal.*)

"In conclusion, your committee has no hesitation in affirming the existence of *unquestionable evidence of decided chronic disease* of the minute blood-vessels in numerous minute *diffused* areas, accompanied by *alterations of the cellular elements* in the specimens of brain submitted to their examination."

Thus every avenue of escape from the dilemma in which the *Medical News* is placed by the *dementi*, which this *post-mortem* constituted for its non-expert and frequently bitter and personal editorial expressions in behalf of Guiteau's sanity while he lived, is closed. Its perversion of the accepted principles of mental pathology, and its misrepresentation of the official report are fittingly closed by the subjoined lines, which afford amusing, if not instructive, reading when perused side by side with an earlier editorial expression in the same sheet:

(*From the Medical News, July* 8, 1882.)

"Notwithstanding the advances made in the means of observation and in the interpretation of changes discovered in the nervous centres in cases of mental disease, it still remains true that there is no necessary dependence of even extreme mental perversion on recognizable lesions. It is not safe to predict that, a mental disease being given, a certain series of morbid alterations must be found. * *

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Increasing experience, clinical observation and experiment tend to show that minute alterations in the cortex suffice to produce extreme mental derangement, when extensive coarse lesions in the other parts of the brain have little influence on the operations

Conclusion of Editorial in Philadelphia Medical News of September 9.

"As, however, extensive lesions of the brain are not incompatible with a normal exercise of the intellectual faculties, it follows that the mere structural changes of the organic substratum cannot be safely interpreted alone. The clinical history must be studied in connection with the alterations in the cerebral structures. If we pursue this logical course, we can be conducted but to one conclusion—that although Guiteau was not strictly normal in respect to the condition of the organic substratum of the mind, and in respect to its symptomatic expression, *he was, nevertheless, a responsible agent, in that he had a clear conception of the distinction between right and*

of the mind. It is probable, indeed, that mere molecular changes in the gray matter of the mental sphere may much affect its functions."

wrong, and realized the nature of the crime and its punishment.

There is, therefore, in the microscopical revelations no reason for changing the opinion which we originally expressed, that Guiteau, an abnormal character, justly suffered the penalty of the law for the high crime he had committed."

With these quotations we leave the disagreeable task of commenting on the ethical aspects of an unprecedented journalistic *salto mortale* to our readers, and proceed to attach that signification to the appearances found in Guiteau's brain, which the experience of the best alienists and pathologists justifies us in doing.

In the first place, it is to be regretted that the committee have not informed us what re-agents they employed in hardening the tissues. That there were extensive and diffuse lesions in every part of the organ of the mind which could in no way have been modified by any *post-mortem* or chemical changes is evident from the fact that tissues treated in the same manner and derived from healthy subjects failed to show such changes, and that they differed in their distribution in the same brain. The strongest proof of their genuineness is, however, to be derived from an analysis of the lesions themselves, as reported by the committee. That the disease dates back many years requires no further proof than is to be derived from the association of the facts, that the lesions were diffuse, involved the membranes, the cortex, the ganglia and the white substance, that the nerve-cells showed the results of long-continued and slowly produced nutritive disturbance, and that an extreme degree of atrophy had been established in one of the cortical layers. No one remotely conversant with the appearances observed on the *post-mortem* table and under the microscope will require more than these facts to convince him of the chronicity of

Guiteau's disease. The interesting question remains: Does that disease demonstrate insanity, and, if so, what type of insanity does it indicate?

With regard to the first question, we shall content ourselves with placing the most eminent and unquestioned authorities in the witness box:

From Griesinger's Mental Pathology and Therapeutics.
(*Italics in original.*)

"Generally speaking, it is far more the *diffuse*, the more general diseases, involving a large portion of the cerebral substance, or a great extent of its internal or external surface, than the circumscribed local diseases, which are found in the insane; in particular, a comparison of the facts lying before us, appears decidedly to support the view *that the most important and most constant changes in the insane consist in diffuse diseases of the externul layers* of the cortical *substance—that is*, of the *surfaces of the brain and of the membranes covering them*; and it would be justifiable in many cases of insanity which correspond to palpable changes in the brain, to consider *that the chief and essential disease is that of the periphery of the brain.* Many facts also could speak in favor of an essential participation of the ventricular surfaces; but this point is as yet not so well established. Of the various sections of the cortical gray substance of the convolutions, we find the morbid change most frequent in the anterior and middle (superior) portions of the great hemispheres."

(*From the Official Reports on the recent and microscopic findings in Guiteau's Brain.*)
(*Italics ours.*)

"Chronic disease in numerous minute *diffused* areas, accompanied by alterations of the cellular elements, in the specimens of brain submitted for their examination. While the lesions found were most marked in the corpus striatum and in the frontal region of the cerebral cortex, yet they *very diffusely* pervaded all portions of the brain which the sections represented."

"The first (outermost) layer (of the frontal region) seemed to be thinned almost to nothing."

The dura mater was thickened and adherent to the cranium: the arachnoid showed yellowish and milky opacities of considerable extent. (All the reports of the examination of recent brain.)

"It is sufficient to state that they were usually identical with those noted in sections from the frontal region, the only difference worth mentioning being the fact that the areas in which the vessels offered a granular degeneration were much less numerous and extensive than in the frontal region."

"While the lesions found were most marked in the corpus striatum and frontal (anterior being synonymous with frontal here) region of the cerebral cortex."

These views of Griesinger and the similar ones of Parchappe constitute the *Alpha* and *Omega* of the opinions

given by the leading British authorities. Krafft-Ebing says:[1]

"In the secondary states and terminal phases of insanity we find, as a rule, formative changes in part consisting in the residua of inflammatory and degenerative processes in the cerebral membranes and the cerebral cortex, which are evidently induced by these nutritive disturbances."

Emminghaus[2] summarizes the opinions of these and other leading authorities very happily in the following lines:

"Only those macroscopic and microscopic (histological changes), which are found in the cerebral cortex of the insane, can be considered as essential features of the general morbid anatomy of the psychoses in the light of the views announced in paragraphs 6 and 18 with reference to their seat. But we must also consider as very important certain changes of the skull, of the brain-membranes, the larger intracranial blood-vessels and the medullary substance of the cerebrum; for these frequently involve the integrity of the cortex, thus standing in an etiological relation to the affections here considered, and, on the other hand, are frequently formed as concommitant or consecutive changes with cortical disease."

Rarely has that kind of literature which relies on the author's faculty of abstracting the views and observations of others, redounded to that author's credit[3]. But it is a still

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[1] Lehrbuch der Psychiatrie, I., p. 11.

[2] Allgemeine Psychopathologie, p. 387.

[3] An exposure of a patent literary loan is to be found in "What has Been Done by the Asylum Association." Speaking of "Pathological Researches," by John P. Gray, M. D., read before the Association of Superintendents (*American Journal of Insanity*, January, 1871), the present writer there says:

"Let the reader, in order to test the originality of this article, compare its pages 337-344 with pages 32 to 70 of Rindfleisch's text book on Pathological Histology, and I shall be very much surprised if he does not come to the conclusion that the nucleus of 'Pathological Researches' is a substantial though imperfectly digested and assimilated abstract from a student's hand book. In fact, the different forms of pathological change are given in the same order, even though the order of conditions of 'infiltration' and conditions of 'involution' is reversed. Throughout the 'abstract' other similarly material (?) modifications are made; with what object the reader will readily surmise. But these 'modi-

more rare, though a fortunate occurrence when the popularity-seeking medical witness and his untruthful medico-journalistic advocate are convicted of the fallacy of their statements and conclusions by unguarded confessions made in such contributions emanating from their own camp. The latest effusion from Utica contains a description of the essential pathological condition of the insane brain, which is, in its facts and occasionally in its language, almost a paradigm of the report made on Guiteau's brain.

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fications' the author has not been uniformly successful in, as witness the following from page 335 :

'Now this process is marked by the dissolution of the organized albuminates and the formation of the most varied chemical compounds, which differ according to the seat of the destruction, and the products which are deposited, as crystallized or amorphous matter, liquids or gaseous bodies, which diffuse themselves into the surrounding tissues. This is the process of complete mortification. The presence of foreign living organisms *are* a cause of partial and local mortification. Not only the so-called vibriones, the bacteria, the *botrytis*, the aspergillus, etc., which are found in gangrenous conditions of the various organs, and even in the blood itself, are causes, *but also the processes of life of the trichina and the great variety of the entozoa*.'

"The first half of the above gives a brief abstract of pages 30-31 of Rindfleisch. The latter half is possibly modeled on the following from page 32 of the same work :

'The occurrence of living organisms in gangrenous parts deserves special mention. They are, in the first place, the ordinary superficial layers of mould (aspergillus, oidium), such as we find in all mouldering bodies sufficiently moist; but, besides these, the so-called vibriones, which are met with in the ichor and in the interior of decaying organs, in immense numbers.' * *

"There can be no doubt that the portion of the 'Pathological Researches' which I have italicised improves much on the vigor and originality of its model. I am also quite certain that no one will contest Dr. Gray's claims to spontaneity in this regard! For a short moment I was puzzled to account for the reference made in the 'Pathological Researches' to the *botrytis*; on scanning Rindfleisch more closely, I succeeded in unearthing a *bothrytis* in a figure reference of the same page (p. 32)."

It may be well to remind the reader that Dr. J. P. Gray was the leading "expert for the prosecution" *in re* Guiteau, and that Mr. Deecke is the special pathologist of Dr. J. P. Gray's asylum, while the latter's pathological notes were bodily incorporated in an article on "General Paresis," by the "expert for the prosecution" who attended and attempted to prevent the holding of an autopsy on Guiteau.

From Mr. Deecke's article "The Condition of the Brain in Insanity," reprinted from American Journal of Insanity for April, 1881.

(p. 4) "The first anatomical changes observed (in insanity), therefore, are palpable lesions in the vascular system of the organ."

(p. 5) "This is not a theory based upon suppositions and conclusions but a truth founded upon facts accessible to observation. These conditions, although commonly of a transitory nature, may assume under certain circumstances a chronic and permanent character. In the one case the anatomical change consists in a contraction and induration of the endothelial lining of the vessels, associated with a slow infiltration of the cells with substances from the normal waste of the tissues, by which the interchange of matter between the tissues and the blood becomes impaired. In farther advanced stages this material may be deposited in the perivascular spaces and accumulate in the surroundings of the vessels forming the groundwork of neoplasms and cell-proliferations."

From Report on Guiteau's autopsy by Dr. E. O. Shakspeare and others, republished above in full.

"In areas very numerous, but mainly limited to the gray or ganglionic substance, the capillary blood-vessels presented their walls in a state of granular degeneration (this refers to the corpus striatum, the following to the cortex of the frontal lobes of the hemispheres) * * * * the blood vessels presented in a marked degree degenerations similiar to those remarked in the corpus striatum." "Sometimes these granules were limited within the endothelial cells, constituting the wall of the capillary, but after they were found for a considerable distance completely encircling the vessel. * * * In a general way it may be stated that the cellular hyperplasia or cell multiplication were more marked than in No. 7. * * * * In some instances these white cells were clustered closely around and adherent to the wall of the vessel upon its exterior, and often most abundantly aggregated in the immediate vicinity of a bifurcation. In others the cells were closely packed together upon the external wall of the perivascular lymph space and slightly infiltrated the adjacent neuroglia. * * * * This cellular hyperplasia was much more marked in the fourth and fifth layers than elsewhere."

The verdict of science as represented in the writings of the classic and best living writers on Insanity is that as far as any *post-mortem* examination ever demonstrated the existence of insanity, that condition was clearly demonstrated in the case of Guiteau.

We do not believe, as some have claimed, that the signs found in Guitean's brain indicate that he was suffering from paretic dementia, either in its incipient or other stages. It is true that cases of original imbecility and original mono-

mania, as well as cases of an intermediate nature like Guiteau's, have been recorded, in which paretic dementia complicated the history. We have, indeed, observed instances of this kind ourselves, but in the single one, examined after death, positive signs of the advanced affection were found in the shape of thrombic stasis, spider-shaped cells, new formation of capillaries and sclerosis of the oblongata. The signs of incipient paretic dementia have not yet been established in a positive manner, and we consider it as idle speculation, and irrelevant to the question of the state of Guiteau's mind at the time of the shooting, whether the development of paretic dementia was a possible or probable contingency, at least in the present state of our knowledge. All the changes in Guiteau's brain are such as commonly accompany advanced chronic insanity, rather as results of insane excitement and as causes of terminal deterioration than as causes of the original insanity.[1] The latter, as we indicated in the former editorial on this subject, rests on original anomalies in the architecture of the brain, if we are to attribute it to any somatic cause whatever!

The Guiteau autopsy has proven, 1st. That Guiteau had an asymmetrical skull as well as an asymmetrical and atypical brain, and that these anomalies corresponded in character and extent to those found in some original monomaniacs and original imbeciles. 2d. That unanticipated gross and minute structural diseases of the essential apparatus of thought and reason were present. 3d. That these structural changes were identical in nature, location and intensity with those ordinarily found in connection with chronic insanity as the basis of terminal deterioration. 4th. That inasmuch as the Guiteau of the thirtieth of June, 1882, differed in no psychical respect from the Guiteau of the second of July,

[1] W. and S. Tuke Prize Essay, pp. 12, 13.

1881, the extensive gross and minute changes found in his brain after death are as undoubtedly related to his mental condition at the time of the shooting as to that of any subsequent period. 5th. That the aggregate morbid conditions in Guiteau's brain exceeded in extent, variety and intensity those found in executed persons like Leger, Gabites and Lémaire, whom the world now recognizes to have been insane. 6th. That the delegate from the "prosecuting experts" who attempted to prevent the autopsy from being held, and to hamper it when it had commenced, had the best reasons, from his point of view, for making those attempts. 7th. That the representation derived from the same source, and meretriciously spread among the public, that Guiteau's brain was sound, is now shown to have been—using the mildest adjective—simply untrue. 8th. That a medical journal can be found in the city of Philadelphia which, rather than confess its error, rather than do justice to those whom events have proven to have been in the right, and whom it traduced for adhering to their scientific convictions, undertakes to deny the signification of the most ample proofs of insanity; and to clothe this procedure with some sort of plausibility, inaugurates a species of would-be argumentation which, if consistently carried to its climax, would prove that if no brain whatever had been found in Guiteau's skull, he would have still been a responsible agent, and only the more fit a subject for hanging.

This question of Guiteau's mental state, like many others which involved a display of public prejudice, while settled or approaching settlement in the closet of the scientist, in medical and medico-legal societies, and in properly informed medical periodicals, will for some time continue to be brought before the public in an imperfect way. The columns of the press were and are open to every maligner of the experts who consider Guiteau to have been insane, and closed

against any defence, reply or justification. The advocates of the truth in this instance have all the weapons of science at their disposal, and no others; as far as their position before the public is concerned, they are delivered over, blindfolded and bound hand and foot to the mercy of critics, who may safely venture to declare whether a man was responsible or not by a glance at his brain, inasmuch as the press hungered for such a declaration; and who, having this key to the innermost recesses of the mental mechanism in their hands, will doubtless be able to make a *post-mortem* diagnosis not only of a man's character as to whether that was good or bad, true or false, but also determine what thoughts crossed his mind just prior to death!

In view of all these facts and the admitted one, that in lunatics of the type of Guiteau a *post-mortem* lesion is not always discoverable, the long, extensive and varied record we have analyzed may be regarded as a God-send to those who regarded Guiteau as insane, and who defended that opinion. It was the greater a piece of good fortune as it was, in many respects, an unexpected one; and those whom their advocacy of the truth placed in a position of positive unpopularity and rendered the target of certain anonymous dilletantic scribes of our medical weeklies, have every reason to feel grateful to those who were honest enough to report the truth as revealed in the dead body. True, it is a remarkable commentary on the temper in which this case of Guiteau has been discussed, that the advocates of the truth must be thankful even for a little fair play!

Of the influence of the damaging revelations of the Guiteau autopsy, on our record as a nation this is perhaps not the fittest place to speak. But the conclusion of a recent contribution[1] by the Superintendent of the Government Asylum at

[1] The Last Chapter in the Life of Guiteau; by W. W. Godding, M.D. Reprint from the *Alientist and Neurologist*, October, 1882.

Washington is so apposite, though written before the unexpected microscopic revelations had been made public, that we cannot forbear quoting its perhaps over-moderate language as a fitting peroration.

"But when, an hour and a half later, I stood beside what remained, and saw with what difficulty the dura mater was torn away, and was surprised at the ivory whiteness of the brain-substance, and remarked of the gray matter how thin some portions were anteriorly, and recognized that familiar, milky opacity of the arachnoid, extending over all the sulci of the superior convexity of both hemispheres of the cerebrum, and dipping down into the longitudinal fissure anteriorly, so startlingly-like what I had so often seen in the autopsies of chronic mania, I questioned if it would be sufficient explanation for us to make to the public that this appearance was common in drunkards, and had been found in low types of chronic disease other than of the brain, and, indeed, it was often the result of cerebral congestion, and was frequently met with in advanced life; and if none of these conditions seem to exactly apply to Guiteau, to say further that Delafield is not inclined to attach any importance to it, and omit what Foville and Greding and Griesinger, and in short all writers on the pathology of insanity, have said of its frequency in the chronic forms of mental disease? And since, in the absence of observed lesions of the brain-substance under the microscope (*now abundantly supplied—Editors' note*), we certainly could not claim that mere opacity of the arachnoid proved the existence of insanity in any given case, would it do to boldly claim, in the case of Guiteau, that this thickened diseased membrane should be accepted as conclusive proof that insanity did *not* exist, that by reason of its thickness it acted as a shield to his brain, even as his winter coat afforded a better protection than his summer duster?"

"These were puzzling questions then and there; and the more I pondered the evidences of that autopsy in conjunction with the retrospect of the life thus abruptly closed, the more I felt that it was just possible that the impartial psychological inquirers of the future, studying this remarkable case, might not be so unanimous as we had been in pronouncing this a 'happy ending.'"

The movement started in the New York Neurological Society a short time since does not seem to have spent itself, if we may judge by the public attention that is being given to the irregularities of our American asylums. The Board of Freeholders of Camden, New Jersey, have obtained information that the patients of the asylum at Blackwoodtown are habitually maltreated, it being, as one of the attendants stated, a not uncommon occurrence for patients to be beaten until the blood runs down their faces. On June 10th a patient died from injuries inflicted on him by another patient at the New York City Asylum for the Insane, on Ward's Island. In this, as in the Scott-Harrison manslaughter case, which occurred at the same asylum, the assailant was a dangerous lunatic, whose tendencies, it is claimed, were not discovered. On the same day it was learned that an exactly parallel homicide had occurred at the State Asylum at Utica. The officers of the asylum succeeded in concealing the homicide for two weeks. The Queens County Asylum, at Mineola, Long Island, is assuredly not a model institution. A patient, one Macnamara, whose sanity or insanity does not seem to have been determined, stated in open court that murders had been committed in this asylum; and, evidently driven on by the outcry of the press, an investigation was set on foot. As a result, it was learned that the sexes were not sepa-

rated; that consequent scandals occurred; that vermin abounded; that the officials regaled themselves on champagne at the county's expense; that patients were brutally beaten by the attendants and plunged into cold baths, and finally, that no less a person than the wife of a local justice of the peace, being temporarily a patient, was approached with improper proposals,—a statement, too, which, startling as it may seem, was corroborated by the superintendent. The following newspaper paragraph needs no commentary:

SALT LAKE CITY, Utah, August 23.

Hon. G. A. Tucker, an English gentleman from New South Wales, with letters of introduction to the governors of the States and Territories asking permission to visit insane asylums and jails, yesterday, accompanied by United States Marshal Ireland, and by Mr. Neal, of Louisville, Ky., father-in-law of Governor Murray, visited the Utah Insane Asylum, which is under charge of Dr. Seymour B. Young, nephew of Brigham Young, and three Mormon commissioners. Mr. Tucker says he found twenty-one patients, nine females and twelve males, in the most filthy condition imaginable. Some were in iron cages outside of the main building, while others were in irons, bound hand and foot. Of these patients two were perfectly sane, and have no idea why they are confined. One of these sane persons is a man named Sherman, who has been confined for ten years. He was robbed of his wife by a Mormon polygamist, and has been confined in this place ever since. He appears to be a gentleman who has seen better days, and is from the East. This man is in one of the cages in the yard, which he had fixed up in a tasty manner with crude tools of his own make. A daughter of John Taylor was formerly confined in this asylum, but she had been removed to a private house in the city. Her insanity was caused by her father endeavoring to force her into polygamy. The inmates of the institution are punished with a club and strap; the club being for the men, and the strap for the women. Mr. Tucker says: "I have during the past four months visited four asylums in New South Wales, three in Victoria, two in Adelaide, two in Tasmania, three in New Zealand, one in Honolulu, three in California, one in Ne-

vada, and the one in Utah, and in no instance have I seen sights so horrible as those here."

The incarceration of Mr. Silkman, a lawyer of high standing, in the Utica Asylum, has been given such wide publicity through the daily press, that it only need be referred to. If Mr. Silkman's statements be true—and no effort has been made to contradict them, although some two months have elapsed—an inexcusable outrage has been committed against personal liberty. It would be useless to detail the cases of asylum abuse which have appeared from time to time in the newspaper press. While their number has not been actually large, relatively to what ought to be it has been enormous. We are well aware that a certain proportion of these stories must be taken with many grains, often indeed a drachm or an ounce of allowance, as the allegations of patients whose insanity escapes detection by laymen; but even after a liberal consideration has been thus paid, it is evident that the complaints are too numerous to be accounted for in this way. And yet men can be found who sneer at the anti-asylum movement. Our new Commissioner of Lunacy in New York State will have abundant opportunity to show what mettle he is made of. Should he be the right man for the great place he holds, he will have our hearty co-operation and support. Should he be the wrong man, we tell him frankly that we shall miss no opportunity of holding up neglect of duty from political or personal considerations to the wide scorn it merits. Our asylums must be reformed, and to this end we shall do what little it lies in our power to do.

The Post-graduate School and the New York Polyclinic have started on their career. We have a strong and abiding faith that the movement represented by them will suc-

ceed, because we feel sure that it meets a great want which is generally recognized. What adds to our faith, too, is the instinctive wonder that we feel rising within us as to why this was not done before. Scores of post-graduates throughout the country are very conscious of their need of more ample and accentuated clinical instruction ; nor are they by any manner of means the illy informed ones. The recent post-graduate, with his unblushing diploma fresh upon him, will seek in these clinical schools the knowledge that others gain as hospital internes. The post-graduate of longer standing, whose professional life has been spent away from the great centres of population, will gladly avail himself of this expeditious and compact method of refreshing his information with new facts and new adaptations of old facts. The urban post-graduate, well informed perhaps, and alert in his reading, may desire a special knowledge of some one branch, and where can he get it better than in these new schools? These new schools will, therefore, centralize and dignify the many isolated individual courses of instruction that are always being given in a metropolis by the younger specialists. It remains to be seen how well the members of the two schools will be able to meet the wants of the movement which has called them into life. There is a great future before them if they can take possession of it. The movement is certain to succeed, whoever it be that is to carry it on. We wish the pioneers the success that is due to generous enterprise, and especially due to those who have been the first to give a practical response to the cry for a higher medical education.

It is a curious law of the human mind that, in its eagerness to arrive at the final causes of all phenomena, it should so often select the most salient facts with little regard to

their etiological fitness, and should so seldom have the philosophical courage to confess to a blank ignorance. It is precisely, too, in proportion to mental growth that this trait becomes fainter and fainter; and mental evolution in this regard will be found to repeat itself, not only in the histories of nations, but in miniature in all departments of mental activity. As the savage worships the sun, or the moon, or the stars, or fire, or water, or air, and invokes their protection and dreads their wrath as the first great cause of all things, so the early medical man picked out the great apparent function of generation, the perpetuation of the race, and made it responsible for all the ills of flesh; and as a refined theology and philosophic doubt have succeeded to the crude theology of the barbarian, so modern science has brought into the light a thousand causes more exact and more potent as pathological factors than disturbances of the generative organs. But as the elements and the heavenly bodies are influential among terrestrial and celestial phenomena, so the generative organs stand salient among the inter-playing causes of the human body, and the old barbaric tendency to exalt them into prime importance because of this very saliency is still apparent. Our literature is flooded with works rendered buoyant with this idea. Strike an average practitioner and you have hit a syphilophobist; the uterus and its appendages are credited with more original sin than all the other organs of the body; it was but yesterday that spermatorrhea was fondly regarded as the source of woes unnumbered; masturbation is to-day spoken of in accents of awe; and happy is the chronic invalid who can seek extended professional advice, and go to his grave uncircumcised or without having an imaginary stricture cut!

We have been beguiled into this train of thought by the perusal of an excellent article, one of the thoroughly compilatory kind that tread close upon the heels of original ones in our favor, by Dr. Danillo of St. Petersburg, on the frequency of sexual maladies among the female insane. (*Archives de Neurologie*, Septembre, 1882.)

The writer first arrays pro and con the authors who have expressed an opinion upon this question. Among those who have regarded genital trouble as one of the most essential factors of insanity are Marcé, Falret, Guislain, Mairet, Boyé, Griesinger, Schlager, Brierre de Boismont, Ammon, Krafft-Ebing, Ripping, Schräter and Schüle; while those who entertain an opposite view, or who do not touch upon the subject are Ball, Dagonet, Luys, Boussi, Emminghaus, Leidesdorf, Hammond. Many of these content themselves with stating the fact, without citing any observations in support of it; others confine their inquiries to certain well-recognized uterine phenomena, as pregnancy, accouchment, etc.; whilst others again adduce cases which indicate apparently that different sexual affections, acute and chronic, give rise to mental disease, in some instances grave in character. Hack Tuke found sexual maladies in 10 cases out of 100 insane, Krafft-Ebing 6 cases in 19, and Skene noted only 27 cases of regular menstruation in 192; Keiser, making 10 autopsies on females, 7 melancholiacs, and 3 maniacs, discovered disease of uterus and ovaries in 7; J. C. Howard, in 127 autopsies, observed disease of ovaries and uterus in 7, among which were cancer, ovarian tumors, sarcoma, cysts of the broad ligament, ovarian cysts; Hergt, however, states that in his experience the sexual diseases average 66 in 100; but these were principally anomalies in the position of the uterus, and inflammatory lesions, such as metritis, parametritis, etc. Dr. Danillo himself made a series of investigations at the clinic of Professor Mierzejewski, by

palpation and with the speculum, and he gives the following results: 42 insane and 3 hysterics were examined, the ages ranging from 19 to 62; 6 who were irregular in menstruation, their ages ranging from 44 to 62, presented no genital lesions, except senile uterine atrophy; among the other 39 different sexual alterations were found in 35. L. Mayer, in 1,025 gynæcological patients, found 90 associated with various forms of mental alienation, more or less pronounced. Finally, Dr. Danillo made still other observations of his own, amounting in all to 155, from which he reaches the conclusion that insanity in the female is complicated by disorders of the sexual apparatus in 69 per cent. Dr. Danillo is, therefore, warranted in saying that the frequency is great of sexual derangements during the persistence of the physiological functions, and that this frequency becomes much less after the menopause. He makes no deductions in regard to the influence of sexual maladies upon insanity already existing. All this goes to show, in our opinion, our dense ignorance of the subject, in spite of the assumption of great learning. We simply know that disease of the cortical cells and disease of the sexual organs frequently coexist in the female. What relation one bears to the other, except in such an enormous general disturbance starting from the uterus as pregnancy, we do not know. Gynæcologists will go on claiming that the generative apparatus exerts a potent influence upon insanity. Alienists will go on claiming that insanity exerts a potent influence upon the generative organs. And, after a while, some sober-minded specialist, who is not a *doctrinaire*, will get hold of the truth and introduce it to the public.

Dr. John A. Wyeth has recently performed a successful ligation of the common carotid with the freshly carbolized

sciatic nerve of a calf. The patient dying some six weeks after from her malignant disease, the artery was found entirely occluded, its continuity unbroken, and only a scarcely perceptible depressed ring at the point where the ligature had been. Dr. Wyeth urges for nerve tissue as a ligature that "it is easily obtained, is very strong by virtue of its neurilemma, and is soft and cushioned, since its cylinders of neurilemma are filled with the white substance of Schwann." If the reader will turn to a recent editorial in this JOURNAL on nerve-stretching,[1] he will obtain some idea from the table there given as to the strength of nerves, the sciatic requiring a weight of 84 kilogrammes to rupture it, the radial 27, and even the little mental branch of the Fifth Pair some 2½. It is again an instance of nerve surpassing gut.

In still another case of pseudo-muscular hypertrophy has the spinal cord been examined microscopically, this time by Dr. C. A. Pekelharing, of Utrecht (Virchow's Archiv., 4 August, 1882). This makes the fifth cord that has been so studied, Lockhart Clarke and Gowers[2] having previously reported one, Goetz[3] another, Ross still another[4] and Drummond the fourth[5]. Dr. Pekelharing found the dura and pia mater normal. Macroscopically the cord showed no other alteration than a not inconsiderable hyperæmia of the cervical region. The cord was hardened in bichromate of potash, sections made with Roy's freezing microtome, and stained with picro-carmine or a mixture of picro-carmine and methyl-green. Some cellular collections, whose abnormality we

[1] May, 1882, p. 215.
[2] Medico-Chirurg, Trans., 1874, p. 247.
[3] Aertzl. Intelligenzbltt. München, 1879, p. 419.
[4] Dis. of Nerv. System, Lond., 1881, p. 204.
[5] *Lancet*, 1881. Vol. ii., No. 16.

should greatly doubt, were observed around the central canal, as well as a number of markedly dilated blood-vessels. But the essential lesion consisted of a disappearance of many anterior-horn-cells from the anterior and median groups. Most of these cells had lost their processes, or were only irregular protoplasmic clumps. In several of the sections ganglion cells could be seen only in the lateral groups, and in the conus medullaris even these were wanting. Another curious thing was noticed, which we should deem accidental were it not that something similar had been described by Clarke and Gowers: the white commissure had a gap on the right in some sections, in others on the left, extending from the anterior fissure to a vascular canal, and this was at times filled by a large vein surrounded by loose connective tissue. These ganglion cells were, it is well known, absent in the cases detailed by Clarke, Gowers and Ross, whilst Goetz described only a gelatinous connective-tissue proliferation throughout the cord, with atrophy of nerve-fibres in the white substance, although, as Dr. Pekelharing suggests, in an illustration accompanying Goetz's article no cells are represented in the inner and anterior groups; and Drummond's patient had a tumor, extending from the left anterior cornu. We may, therefore, safely and scientifically assume that lesions of the ganglion cells in the anterior horns are always present in pseudo-muscular hypertrophy, as well as in infantile paralysis and kindred adult affections, and progressive muscular atrophy. But no one has yet offered a satisfactory explanation of the fact that such great pseudo-hypertrophy is characteristic of the one group, and absolutely wanting in the other. To suppose that destruction of one group of cells makes fat, whilst injury to another would cause atrophy, is a rough-and-ready view that may satisfy those localization zealots whose order inadvertently makes an occasional *reductio*

ad absurdum of their theory, but it will not answer for those who may chance to remember how many other factors in the question are entirely veiled to us.

M. Déjérine has been recently making some investigations well worthy of fame, concerning the changes that occur in the cutaneous nerves in eschars supervening during cerebral and spinal diseases. In two cases, one a hemiplegic, the other suffering from disseminated sclerosis, the nerves were in a condition as of parenchymatous neuritis. M. Déjérine cannot believe that these nerve changes are secondary to the cutaneous disease, for it is only certain of the latter which they attend, such as anæsthetic leprosy, zona, perforating ulcer, pemphigus, vitiligo, some forms of ichthyosis, certain ecthymæ, pellagrous exanthema, and they are not found in all varieties of gangrene. Moreover, in one individual an eschar was forming, the skin was scarcely ulcerated, the derma was laid bare and just a little eroded, its deeper layer and the cellular tissue being perfectly intact, and yet not only were the nerves beneath the eschar ulcerated, in spite of the aforesaid integrity of the deeper dermal layers, but also those contained in the healthy skin were diseased to an equal extent, even at a distance of eight centimetres. These are regarded as sufficient reasons for excluding the probability of a cutaneous origin of the neuritis. Nor will M. Déjérine accord any grace to a spinal departure of the neural changes, because the posterior roots have always been intact; he admits, however, that no histological examination has ever been made of the posterior root between the ganglion and the union with the anterior root. These syllogisms having, therefore, driven the cause out of the cord and out of the skin, it can find no abiding place but in the peripheral portion of the nerve; and there

M. Déjérine does cautious battle for it. But he glosses over the significance of the great up-looming fact, which by title heads his article, that these eschars form during the presence of cerebral and spinal maladies. Has this no etiological meaning?

Through an oversight we neglected to make any announcement of the Annual Meeting of the American Neurological Association, and the sudden illness of one of our editors, with the unavoidable absence of the others, prevented us from reporting the proceedings.

The meeting was more representative than any that have heretofore been held, inasmuch as neurologists were present from Boston, Philadelphia, Chicago, Baltimore, Brooklyn and New York. The increased attendance was probably due in a large measure to the efforts of the distinguished president, and we trust that the future will see no diminution of interest in this national society, whose influence upon the future progress of alienistic and nervous studies may be incalculably great, if our centres of population go on increasing at their present rapid rate and call for specialists in a dozen different portions of this widely expanded country. Not the least pleasant feature of the occasion was the reception given by the president.

The officers for 1882 of the Société Médico-Psychologique are: M. Dally, President; Motet, Vice-President; Ritti, Secretary-General; Charpentier and Garnier, Annual Secretaries; Voisin, Treasurer; Committee of Publication, Falret, Dagonet, Dumesnil; adjunct members to the bureau pour le conseil de famille, Luys and Legrand du Saulle; Committee on the Aubanel prize, Dagonet, Falret, Legrand

du Saulle, Mesnet, Charpentier; Committee on the Esquirol prize, Baillarger, Métivier, Lunier, Blanche and Gagnier. A new prize was established by the Belhomme family, of the value of 900 francs, to be called the "Belhomme Prize." It is triennial. It will be first awarded in April, 1885, to the author of the best essay upon Idiocy. The details of award are yet to be settled.

In the terrible affliction that has fallen upon our distinguished co-worker, Dr. Seguin, he has a sympathy that thrills from our every fibre. It is an event that makes even alienists to bow their heads in an awed silence.

REVIEW DEPARTMENT.

CLINICAL LECTURES ON DISEASES OF THE NERVOUS SYSTEM. By THOMAS BUZZARD, M. D. Phila.: Blakiston & Co., 1882.

Dr. Buzzard has certainly written a book of value. The lectures have had additions made to them after their delivery, but they are still lectures. The author himself so concisely outlines their scope that we cannot do better than give his words: "The series does not represent a systematic course on even a large division of diseases of the nervous system. * * * * It is hoped that the various morbid conditions have been considered from no narrow stand-point, but with a constant endeavor to employ them as steps in the investigation of diseases of the nervous system as a whole." There is no attempt at literary skill; there is often diffuseness of language; there are at times such one-sided references to contemporary literature that one is left in doubt as to the amount of the author's learning; as Dr. Buzzard himself has said above, there is no attempt at systematic treatment: but yet it is all the honest work of an honest and earnest and enthusiastic mind, honestly told. The book belongs to that peculiar class of productions, pardonable in science, unpardonable in literature, whose solitary reason for existence is that they present either new facts or new ways of looking at old facts. It would not do for the callow student to take up these lectures in order to gain a thorough knowledge of the nervous system; he had far better turn to some systematic treatise. But the specialist, versed in treatises, can link his arm in Dr. Buzzard's, and go under his guidance through these cases with such profit as comes from a frank, unaffected conversation with a teacher of large experience which has been illuminated and analyzed with pains, eagerness and eminently good judgment. He has done just what he claims

in his preface—considered the subjects from no narrow standpoint, and made steps for the further investigation of neurological maladies.

The lectures are twenty-five in number, and they treat of the tendon-reflex, poliomyelitis anterior, the differential diagnosis between certain hysterical conditions and myelitis, tabes dorsalis, opthalmoplegia externa with tabes dorsalis, gastric crises of the same disease, tabes dorsalis and syphilis, osseous and articular lesions in tabes dorsalis, their association with gastric crises, on certain little-recognized phases of tabes dorsalis, prolonged somnolence in cerebral syphilis, rheumatic and syphilitic neuritis, cases of rapid and almost univereal paralysis, paralysis agitans, spastic paraplegia from myelitis, cervical paraplegia, syphilitic paraplegia, tetany, on phenomena of transfer produced in epileptic patients by encircling blisters, some points in the diagnosis of lead palsy. A wide field is certainly traversed.

Dr. Buzzard is one of those who believe that the tendon-reflex is invariably absent in tabes dorsalis, except possibly in some few cases, such as have been indicated by Westphal, in which the posterior sclerosis does not extend to the lower dorsal portions of the cord, and in which there is a coincident descending degeneration of the lateral columns from the cervical to the lower dorsal region. The many seeming deviations that have been trumpeted abroad to Westphal's rule may be explained by these latter cases, and also by a fact to which Erb long ago called attention, and of which Buzzard for a time thought he was himself the discoverer, viz., even when a blow upon the ligamentum patellæ will evoke no tendon-reflex, a tap upon the vastus internus will cause a distinct muscular contraction, often, indeed, greatly exaggerated beyond the normal; in other words, muscular contractility and the tendon-reflex are two entirely distinct things. Dr. Buzzard offers some ingenious suggestions as to the diagnostic uses to which the tendon-reflex can be put. Suppose the knee-phenomenon is absent. It then becomes evident that there is a defect somewhere in the nervous arc which runs from the quadriceps tendon through the sensory fibres of the crural nerve to the posterior horn, thence to the anterior horn, and outward through the motor filaments of the crural to the tendon again. Should the patient be walking about freely, and be able to flex and extend his knee-joint well, the motor portion of this arc is intact, *i. e.*, the anterior horn, and intra-spinal and peripheral motor

fibres of the crural. But the patient may have been confined to bed and have grown weak and emaciated. Should he be able to move the knee-joint freely, and should, at the same time, a blow with a percussion-hammer or a stethoscope upon the vastus internus just above and inside the knee-joint evoke a muscular contraction, we may again conclude that the motor portion of the arc is unimpaired. Should the limb be very powerless, however, a muscular contraction of the vastus internus following a blow would not be evidence of the integrity of the muscle, because of the well-known fact—which, by-the-bye, although mentioned years ago by Erb, seems to have been unknown to our author—that a muscle severed from its ganglion will still exhibit this individual motility. The muscular contractility may thus be decisive or not, according to the voluntary power or not over the limb. As the patellar tendon-reflex may be lost from very slight structural change, frequently when there is a very slight decrease in the faradaic reaction, it is always well, when there is any doubt, to test the vastus internus with faradaism, or a slowly interrupted galvanic current, as well as to measure carefully the circumference of the thigh and compare with the opposite side. If these tests have proven the motor arc to be free from disease, the defect must lie in the sensory portion of the arc; and thus the reader is led freshly into familiar paths. In referring to the bibliography of the subject, Dr. Buzzard omits to make any reference to an article by Dr. L. C. Gray,[1] in which it is claimed, as a deduction from a series of investigations which are narrated, that the tendon-reflex is under the control of a nervous mechanism entirely different from the voluntary nervous system, and approximating much more closely that of the pneumogastric and general sympathetic. For these filaments the name of the *tendon-nerve fibres*, motor and sensory, is suggested. We believe that a due consideration of this claim will aid in elucidating many phenomena that are now obscure.

The chapter upon hysteria is good reading, not only because the cases are instructive, but because it contains a pungent epigram which runs thus: "You cannot cure a case of hysteria so long as you have any serious doubts about its nature." This is certainly the keen expression of an indubitable principle, and one

[1] The Tendon-Reflex: Its Prevalence and its Physiology. Jour. Nervous and Mental Dis. April, 1879.

that may do gallant service, provided its limitations are recognized with equal keenness.

The lectures upon tabes dorsalis are opulent in original observation, original thought and sifting of current topics by the aid of a considerable personal experience. Dr. Buzzard believes that the characteristic pains of locomotor ataxia are very exceptionally absent. In fifty-four cases, in which notes were taken, in only one was there a complete lack of them, a smaller proportion than Erb's, who, out of fifty-six cases, could obtain no history of any pain in five. In one other patient of our English author's, however, there had been rheumatic-like pains, but they had not possessed the typical suddenness, short duration and sharpness. Three tabetic patients are presented, who had anæsthetic and neuralgic symptoms in the distribution of the fifth nerve, and the writer calls attention to the fact that such symptoms, as well as similar ones in the region of the great occipital, are really quite frequent in tabes. He lays down the rule that "flying, so called 'neuralgic' pains in the head, *when they attack both sides and do not map out the district of one or other division of the fifth nerve*[1], should lead to attentive examination for symptoms of tabes." There can be no doubt that violent cephalalgia, especially when amaurosis and atrophy of the optic nerve co-exist, will be very generally mistaken for symptoms of intra-cranial tumor, and this observation and warning are, therefore, of immense worth. A pertinent addition is made to a little matter that may have interested some of our readers. In the *Lancet*, November 19, 1881, appeared an account by Mr. Higgens of three cases of alleged simple atrophy in one family. At Dr. Buzzard's request, Mr. Higgens examined the tendon-reflex and the contractility of the pupil in one of them, and found none of the former in the patella, ulnar or radial region, or in the tendo-achillis, and the so-called Argyll-Robertson symptoms in the latter. Dr. Buzzard is one of those who have frequently observed great hunger occurring during the gastric crises. Speaking of the association of syphilis and tabes, he states that of fifty-three cases of his own twenty-five were syphilitic, although there may have been more, as some of the notes were imperfect. Adding together the figures given by Fournier, Erb and our author, 76 cases out of 127, or 59.8, had a history of syphilis. The noteworthy suggestion is made that tabes may lead

[1] Dr. B's italics.

occasionally to the formation of that form of calculus which Sir Henry Thompson calls "local" in contradistinction to the constitutional form, as from uric acid, etc. In advanced stages of the disease, it is explained, there is often vesical paralysis, but difficulty of urination may be a very early symptom, possibly due to lack of vesical reflex. The natural desire to urinate will be wanting in such instances; the patient may not be conscious of the act, and, under such circumstances, a cystitis may arise, productive of a phosphatic calculus. "It is worth while remembering," says the personage of this *critique*, "that a bladder trouble of this kind may be as prominent and absorbing a symptom as either the gastric crises or the optic atrophy, and if ataxy of gait be absent, the real nature of the trouble may easily be overlooked." Sir William Gull, at the International Medical Congress of 1881, stated that the case of the late Emperor of the French, Napoleon III., was of this nature. Together with the late article of Dr. Hammond on the urinary incontinence of the preataxic stage, this invests our vesical *ana* with a new diagnostic importance. "A sudden giving way of the legs, so that in many cases the patient actually drops to the ground," is described as very common in locomotor ataxia, usually accompanied with a sharp fulgurant pain in the lower extremity, although it may occur alone. This is quite aside from any ataxia. Dr. Buzzard evidently does not know that this has been observed by Charcot and his school, notably by Féréol. We are told of the case of a girl of eighteen, in whom, the brachial artery being blocked by what the other symptoms showed to be apparently syphilitic deposit, the circulation became restored under the use of mercury and iodide, the pulse becoming tangible and sphygmographic tracings being obtained where there had been no arterial movement for weeks.

And so the matter flows thickly through the other topics. It is a genuine source of regret to us that we cannot carry our readers through them—such regret as one feels at not doing full justice to what has a molecular prerogative of full justice.

The illustrations are mainly diagrammatic, and fairly serve the black-board-like purposes for which they are intended.

There are, as we have intimated, defects in the book. The pathological descriptions are evidently written by one who, though entirely at home by the bedside and in the clinic, has not been to the manor bred at the autopsy and with the microscope.

Indeed, in the chapter on infantile paralysis, the remarks of this nature are positively incorrect. It is stated, on p. 51, that in an early stage of this disease the anterior cornua are in a condition of inflammatory softening, the connective tissue and its nuclei are increased, "the anterior horn as a whole appears wasted." This is certainly not an accurate description of the granular disintegration of ganglion cells that occurs, with subsequent or only slightly coincident implication of the connective tissue ; and the appearance of wasting is a sign of an advanced stage. It is curious, too, that, although the author speaks repeatedly of the "reaction of degeneration in paralyzed muscles," and describes it correctly and lucidly, he nowhere mentions Erb as an authority upon the subject, but constantly refers to Duchenne, as though he, and not the Heidelberg investigator, were the authority of authorities. A most remarkable passage, however, is that which begins at the bottom of p. 69. A child, one year old, healthy, well-nourished, became suddenly paralyzed in one lower extremity, after a few hours of malaise unaccompanied by fever. When stripped she looked at the motionless limb as if in distress, "and appeared to guard it with her hand." Pressure was painful, but there were no signs of injury. A large deposit of uric acid was found in the urine, and the child had been fed on milk food containing an enormous amount of sugar. Citrate of potash, and a purgative completely cured the patient in a day or two. Unquestionably this is an interesting case, and perhaps some may deem the author's explanation to be still more so. He supposes that minute crystals of uric acid became deposited in the loose connective tissue lying between large muscles, and over which they glide ; this tissue consists of lymph spaces, and the uric acid here produces a subacute inflammation, which in its turn produces pain and tenderness and temporarily paralyzes the muscle. The author thinks there is little doubt that this condition of affairs obtains in the lumbago and sciatica which are readily cured by purges, alkalies and iodide of potash. We are pained to disagree with Dr. Buzzard. We are of the opinion that the uric acid crystals become lodged in the nucleus or nucleolus of the ganglion-cells in the anterior horns, obstruct the molecular inter-play, paralyze the muscles over which these cells preside, and cause pain and tenderness by reflex irritation of the posterior horn. To be sure, we have no scientific proof of our theory ; but that is of no consequence, for Dr. Buzzard has none either, except, perhaps, that Dr. Burdon-Sanderson suggested the idea to him.

Notwithstanding these faults, which our position as critic forces us to note, and which our opinion of the author, formed from his writings, makes us believe he will frankly acknowledge when his attention is called to them, we should have been sorry to have missed the pleasure and instruction which have come to us from the perusal of these pages.

TWO HARD CASES; SKETCHES FROM A PHYSICIAN'S PORTFOLIO. By W. W. GOODING, M. D. Boston: Houghton, Mifflin & Company. 1882, p. 257.

Under this somewhat strange title Dr. Godding, the well-known Superintendent of the National Insane Asylum at Washington, discusses the cases of a masturbatory lunatic and of the presidenticide Guiteau. The former history is rendered interesting by the frequent escapes of the subject from the asylum, the liberality with which the same lunatic provided for the escape of his fellows on other occasions, seeing them safe beyond the asylum wall and voluntarily returning himself, and his death, which took place by suicide, he having keenly felt the breaking of his word of honor, that bond which experience showed was stronger in his case than iron bars, stone walls and human watchers. About one-eighth of the book is devoted to this case, the rest to that fated subject of numerous biographies, the last presidential assassin.

Dr. Godding furnishes a readable and interesting outline of Guiteau's career, including his ancestral history, and contributes many facts which were not brought out in the trial, nor are now generally known. The author states, "By the courtesy of the officers of the Government I was granted permission to visit Guiteau in the jail late in September, early in October and again during the progress of the trial. As an expert on Insanity I was detained in the court-room through the greater part of the proceedings." He neglects to inform us how it happened that if the "Napoleon of the Defence," Mr. Corkhill, was so very honest in believing Guiteau sane as Dr. Godding alleges, he did not venture to call upon the only Government Superintendent we have to testify in the case, but instead confided the matter to men from a distance who may be safely relied on to "find for the popular side," right or wrong in every instance?

The history of the shooting is graphically related. Speaking of

the sufferings of the President, Dr. Godding says: "We said God is good; he will live. And of all the millions of Christendom only one man was found to say: 'He must die, for God wills it': the man who afterwards said, when on his trial, 'God and one man are a majority.' * * * * I said then, if the President dies no plea of insanity can save this man from the gallows; if the President lives, no commission of lunacy will fail to find him insane, and he will end his days in an asylum, for the tidal wave of public opinion in this case will be irresistible. I have seen no reason to change that statement since."

This strikes us as a very positive assertion, in fact, it appears to be a polite paraphrase of the much-criticised statement of a witness for the defence: "He who pronounces this man positively of sound mind is either not an alienist or not an honest one." The "alienist" who could pronounce the man sane if the President died, and insane in case he recovered, must be a very weak man; and weakness in a question of science is only susceptible of the alternative explanations of ignorance or dishonesty, and there is no earthly reason why it should not be publicly condemned on either ground. We venture to presume that if a commission of inquiry had been appointed, of which Dr. Godding was a member—and nothing more natural, since he is the Superintendent of the National Asylum—that at least one of its members would have examined into Guiteau's mental state, irrespective of the direct and indirect effects of the shot he fired!

The most interesting and valuable part of the book, valuable because Dr. Godding was an eye-witness of what he relates, and a most impartial one, is that devoted to the rôle of the experts who testified. We subjoin the original text, as a salutary and historical warning to some of our over-zealous trans-Atlantic critics, who have ventured to dispose of the question of Guiteau's mental state on the basis of newspaper editorials and *ex-parte* reports.

"The case was probably lost for the defence before the expert testimony was reached; indeed, I hazard little in saying, lost before the issue of the trial was joined, but as the medical expert witnesses presented, probably, the most imposing array of physicians familiar with the treatment of the insane ever assembled at a criminal trial, their testimony properly comes under notice here. It was the usual sad spectacle of scientific men, summoned not as 'amici curiae,' but as partisans for the opposing sides. Here, perhaps without impropriety, I may say that it was by the

courtesy of the District Attorney that I was invited, early in the case, to a seat with those eminent *savants*, and asked to remain through the trial as being myself interested in these scientific questions; and while there I was drafted into the service of the defence to respond to their hypothetical axiom. This gave me at once opportunity and excuse for being present with so distinguished a body of experts.

"Mr. Scoville, having no doubt himself of the insanity of his client, supposing it was only necessary for those familiar with the subject to examine him to at once pronounce him insane and, therefore, irresponsible on the 2d of July, summoned the medical superintendents of institutions for the insane, as well as others skilled in the study of mental disease, from the East, West, North and South, irrespective of their individual views; not doubting that scientific men would at once go to the bottom of the matter, and through all the only too evident depravity recognize the disease.

"While this was all very frank and honest, and conclusively proved that he believed in the truth of the defence he was making, it was not a lawyer-like way of going to work to clear his client. A little consultation with any one familiar with the latest phases of scientific study, or of the peculiarities of the sane mind, would have shown him that in an obscure case like this, among equally scientific men, very different conclusions as to health or disease would be drawn from the same mental phenomena, these conclusions depending largely upon the natural organization and temperament of the minds that formed them. To go farther than this, to point out what these differences in organization are, would be obviously out of place in what is designed to be simply a *résume* of the points brought out at the trial. It is enough to call attention to the fact that such natural distinction exists, and to say that it is a difference inherent in the very constitution and character of the mind itself, and not at all explained by the artful suggestions to jury from Mr. Davidge that the experts for the defence were 'all moral insanity men,' which was not the fact.

"With no concert of action, with no previous study of the case, unless from the newspapers, with very little desire for notoriety gained in defending a criminal of this type, these eminent gentlemen arrived in Washington, in answer to a compulsory summons, to be confronted, if not confounded, by this anomaly of the age, and were said to have held a conference—unwisely, as it seems to

me—on his mental condition. But whatever may have been their individual opinions—witness the pamphlets of a number of them since—it is clear that, collectively, they did not come up to the requirements of the defence, as will appear further on.

"The prosecution did not thus cast their net into the sea. They wisely selected Dr. Gray, the well-known expert of Utica, whose mental organization and personal characteristics, as well as his long experience in the care of the insane and in the examination of lunatics of the criminal class, have admirably fitted him for the position of medical adviser and advocate which he occupied in this case; and finding from the doctor's study of Guiteau that he was and always had been perfectly sane, the prosecution called to his support a number of professors, prominent in their different sections, most of them superintendents of hospitals, men of the same school of thought as Dr. Gray, and to each of them a special field was assigned. They also received into their ranks a number of recruits from the list of those subpœnaed, but not called by the defence, and thus intrenched they awaited the attack. They had also this marked advantage over the defence that the wind of popular favor blew on their backs, and not in their faces.

"The defence opened with Dr. Kiernan, a young man from the West,[1] who was formerly connected with the hospital on Ward's Island, New York, and now a practising physician in Chicago, also an editor of the *Medical Review* and a lecturer on mental diseases at one of the colleges. It might well be thought an embarrassing position in which to place a young man, comparatively unknown, to open the medical expert testimony of this celebrated case, on which the eyes of the world were looking, though I do not know that Dr. Kiernan felt it so particularly. But after establishing his qualifications to speak as an expert on insanity, Mr. Scoville contented himself by asking him a single hypothetical question, which assumed that 'the prisoner at the bar committed the act of shooting the President, under what he believed to be a Divine command, which he was not at liberty to disobey, and which belief amounted to a conviction that controlled his conscience and overpowered his will as to that act, so that he could not resist the mental pressure upon him,' a question which I have called a hypothetical axiom of insanity. This being answered, Mr. Scoville turned him over to the cross-examination.

[1] Originally from the East, we believe, and but two or three years the junior of several of the witnesses for the prosecution.—REVIEWER.

"It was apparently a pleasure to Mr. Davidge to converse with this young man. At the second question he drew out the fact that the witness did not believe in a future state of rewards and punishments; and though this was not, strictly speaking, a scientific refutation of the prisoner's insanity, it was in effect to make a Philistine of this witness to the jury, who had stated under oath that they believed in the doctrines of the Christian religion. Dr. Kiernan bore up manfully under the keen questioning of the veteran lawyer, until he drew out the further statement that five out of every twenty-five persons that one would casually meet on the street were on the road to the insane asylum, which finished this witness with the jury; for, as Mr. Davidge suggested, it would land two of their number there, if it were true. An unimportant non-medical witness followed, and then Mr. Scoville said, 'Call Dr. Nichols.' There was an expectant stir and a feeling of relief in the court-room. He was not 'an agnostic.' Dr. Nichols had been for twenty-five years superintendent of the hospital at Washington. He was more widely known and respected here than any other expert in the court-room; probably every member of the jury knew him personally. The Judge on the bench had been an official visitor of his hospital for years, and if he was to appear for the witness, it was Hector himself taking the field. His testimony had saved Mary Harris, on trial for her life in the same room. And now the lawyers of the prosecution gathered themselves up. In a few words, the witness stated his present position and his length of service in different hospitals; then he replied affirmatively to the hypothetical question, and as the whole court-room was waiting for the real testimony about the prisoner's state of mind, anticipating an intellectual treat, Mr. Scoville simply said, 'That is all.' There was blank astonishment and disappointment on all sides. The Government was taken entirely aback; they had no hypothetical question ready; they were not allowed to ask another, and Dr. Nichols left the stand and the case.[1]

"Drs. Folsom, Godding, McBride, Channing and Fisher, in rapid succession, answered the hypothetical axiom, and sat down; and this, with the exception of the testimony of Dr. Spitzka, who arrived at a later date, closed the medical expert testimony for the

[1] Not until counsel for the prosecution gave the false impression that Dr. Nichols was a witness favorable to them, by intimating that they would call him later, which very nicely, for them, they did not.—REVIEWER.

defence. It was a complete surprise, but was it a success? In my ignorance of the law, I supposed it was merely a shrewd move of the honest gentleman from Chicago to confine his witnesses to the expert opinion upon a hypothetical case, and then, if the Government introduced direct testimony from experts in regard to their observation of the prisoner since the second of July, to give the experts for the defence an opportunity to testify as to facts observed in sur-rebuttal. I now understand the real trouble to have been a lack of positive belief on the part of the experts for the defence, in the prisoner's insanity; some were of opinion that the man was sane, and so testified later for the Government;[1] and those who doubted his sanity were at a loss where to class him, and were indisposed to create a new form of lunacy for the case and call it Guiteauism, nor were they quite prepared to adopt the 'primäre Verrücktheit' of their young leader, Dr. Kiernan, nor to class themselves among his fives by accepting his ratios. It was the old story of a house divided against itself, that came to naught.

"Observing, as a by-stander, though called upon as one of the '*posse-comitatus*,' the hypothetical question appeared to me to be too near a truism to carry much weight to the jury; as Dr. Callender well expressed it, when asked the question in his cross-examination, 'Under that hypothesis his insanity is a self-evident proposition.' So it seems to me, although I am aware that Drs. Worcester and Strong were staggered by it, and the distinguished leader of the Government experts, after bringing all his erudition to bear on it, did not feel equal to answering the question, though the objections that he urged to its answer might impress an unbiased listener as hypercritical. Then, too, Dr. Beard frankly told Mr. Scoville that he could not answer that question for the defence, but his mind was so organized that he would have found no difficulty in answering both of the hypothetical questions for the Government that that man was insane. It is a mistake to confound conceit of opinion with strength of mind; but some men are so constituted that they cannot help it.

"The testimony of Dr. Spitzka was well delivered and highly entertaining to the audience; I think that really prevented its producing any lasting effect on the minds of the jury. The doctor was in court after the issue of a compulsory process, which the

[1] This does not apply to any of the gentlemen who are named as witnesses for the defence by Dr. Godding.—REVIEWER.

counsel for the Government evidently believed was done to heighten the effect of his very positive testimony for the defence. He had already criticised the District Attorney's conduct of the case in unsparing terms in the public[1] journals; he held in perfect contempt the line of experts who sat in front of the witness-box, a feeling that was apparently reciprocated.

"The doctor stated that he found Guiteau insane; 'the marked feature of his insanity a tendency to delusion, or insane opinion, and to the creation of morbid and fantastical projects;' a 'marked imbecility of judgment; and, while I had no other evidence than the expression of his face, I could have no doubt he was also a moral imbecile, or rather a moral monstrosity.' He had decided ideas about the 'monstrosity' that he was analyzing, he had his knowledge well in hand; was quick at repartee; had an assurance that was all-sufficient; he had met most of the 'bad four' on previous occasions and was not afraid of them, and he rattled off his testimony with a volubility that was bewildering, and a positiveness of assertion that was startling to science. It was soon clear that the cross-examination was going, not so much for Guiteau as for Spitzka, and the result was a brilliant gladiatorial contest of some hours, without discomfiture to the witness, who left the stand with the general impression in the room that here was an 'agnostic' who did know, and what he knew he knew for certain. His estimate of Guiteau was in many respects correct. The congenital character of his case, in part, is at least probable; there is some asymmetry of the head, but that of the mind is obvious, and if I have never had an hour's conversation with him without being impressed with the talk as that of an insane man, though less by its farrago, than its leading ideas and general tone. But the effect of the solid points in the testimony was lost in the brilliancy of the rejoinders, and I doubt if the jury got beyond thinking the doctor a very clever man, who was fully a match for Mr. Davidge.

"Drs. McFarland and Beard were also called later, but the Court decided not to admit their testimony. Drs. Earle, Kellogg and Richardson, summoned by the defence, gave no testimony in the case, although they all examined Guiteau. This completed the medical expert testimony for the defence.

"The Government placed on the stand fifteen expert medical witnesses. To Dr. Fordyce Barker, the distinguished professor

[1] An error; this was done only in medical journals.—REVIEWER.

of obstetrics, from New York, was assigned the delivery of the definitions and limitations of the disease known as insanity. To Dr. Noble Young, physician to the jail, was given Guiteau's prison life. To Dr. Loring, the Washington oculist, the ophthalmoscopic examination. To Dr. Hamilton, professor of nervous diseases,[1] the questions of malformation of the head, or other possible abnormality or nervous disease. To Dr. Kempster, the studies of cranial asymmetry, drawn from the conformateur.

"Most of these gentlemen also testified on the mental condition of the prisoner, as observed by themselves at the jail and in the court-room. Drs. Worcester, Talcott, Stearns, Strong, Shea, Evarts, Baiksdale, MacDonald and Callender, a number of them recruits from the ranks of the defence, were expected to say what they could in regard to their observations of the prisoner, and answer the two hypothetical questions for the prosecution. It was reserved for Dr. Gray to sum up and close for the Government on the whole medical aspect of the case.

"This was an imposing, crushing array, and as I watched its unfolding and listened to the opinions that were presented, I could not doubt but the only apparent omission would shortly be supplied, namely, the notes of the autopsy and the microscopical examination, although, from the form of the insanity, I knew these would add but little, if anything, but that would vindicate the prosecution. To attempt to reproduce the testimony here would be to swell these outlines almost to the bulky proportions of the stenographer's notes, and would be wholly unnecessary. They all pronounced the prisoner sane on the second day of July, 1881, and sane at the time of the giving of their testimony.

"In a strictly medical paper it would be interesting to trace how, through somewhat different mental processes and lines of inquiry, all these gentlemen arrived at the same conclusions at last; but as Dr. Gray stands at the head, and went quite exhaustively over the whole ground, a brief discussion of his testimony must suffice for our purpose here. Without intending to detract from the merits of, *or relieve from due responsibility*[2] any one of the distinguished experts who rendered such efficient aid in determining the full mental responsibility of Guiteau, and so securing the popular verdict in the case, I feel that I do them no injustice, when as I have no doubt they would say was right, I

[1] Where?—REVIEWER.

[2] Italics ours.—REVIEWER.

accord the first place to Dr. Gray. He was called upon by the District Attorney to decide whether this man should be brought to trial. He made the most exhaustive preliminary questioning of the criminal; patiently day after day he followed up his motives and hunted down his delusions, and from his own mind and his note-book he drew a careful picture of a shrewd, calculating, designing murderer, plotting and finally consummating the assassination of the President, with a sane mind, a clear head, and a steady hand; convincing first himself, then the lawyers for the prosecution, and lastly, the Judge on the bench and the jury in their seats, that this was a bad and not an insane man.

"From what we have already seen of this man's life we can understand that to do this so that it would stand, not for this court and jury alone, but for that future tribunal to which we believe all these decisions will pass for review, was no light undertaking. He deserves great credit for this; he must be willing, too, as I know he is, to bear the full responsibility which was involved in the decision.

"The testimony of Dr. Gray was carefully and deliberately—Mr. Scoville complained that it was argumentatively—given, and was in effect a *lawyer-like summing up of the medical testimony for the Government.*[1] The doctor's long familiarity with courts, as well as all phases of mental disease, admirably fitted him for the position he had taken, and his well-chosen words, earnestly spoken, produced a profound impression on those who heard him. He spoke as fully realizing the importance of having no mistake in the verdict * * * * *"

Dr. Godding then proceeds to the analysis of the "medical" evidence given in such a "lawyer-like" way. While Dr. Godding does so very courteously, in fact, metaphorically speaking, with a tread so cat-like that the real or imaginary dignity of the gentleman criticised may not be thereby awakened, yet it is pretty legible between the lines that he cannot agree with a single essential dictum of the Utica circle. For example, he says: "As listening to Dr. Gray, I sat there, almost the last of that long line of now vanished experts, who for weeks had occupied those seats, I could not help asking myself, wherein is this new enumeration of "all the possible manifestations of insanity," with its convenient limitations to be preferred to the old? It is Gray now, but it

[1] Italics ours.—REVIEWER.

was Ray then ; and I wondered if that mental giant could come back from the shore where he has so lately gone to sleep, if we should not hear some such vigorous English as this : "You cannot get rid of a fact by denying its existence." He then condemns the denial of hereditary insanity as a quibble, and in regard to the convenient designation of insane perverseness as "badness," adds, "Heterodox (according to the Utica school.—REVIEWER) I know it is, but observed facts compel us to be heterodox with Pritchard and Esquirol and Ray, with Morel and Grisesinger and Maudsley, and I know not how many others, in recognizing in some cases a condition inherent, born in the individual, and not a result of education, a condition which writers have recognized under various terms as hereditary mental disorder, insane diathesis, insane temperament."

This tone of criticism characterizes the book. One can read more in Dr. Godding's hints than he cares to say directly. It is a question whether his method or the sledge-hammer procedure is best calculated to expose and condemn and correct errors ! As an example we may mention the reference to Dr. Fordyce Barker, the definer and limiter of the term "insanity" for the prosecution, as the distinguished "obstetrician ;" a more delicious piece of irony could not well be conceived.

Speaking of the closing argument of Mr. Davidge, with whom he is personally acquainted, and who indeed became a trustee of the Government Asylum after the trial, he says : "He seems to me to have accepted, in his own mind, the conclusion that the man was somewhat wrong in his head, but thoroughly responsible for his crime. Perhaps I do him an injustice, but that was the way it sounded to my ears as I heard him." Dr. Godding refrains from criticising the ruling of Judge Cox, and says, "It were fitter that I should criticise the medical experts, whose opinions have rendered such judicial utterances possible."

The description of that final scene in the court-room, when the verdict of "Guilty" was pronounced, is a fine one. In fact, the author has throughout succeeded in composing a very good sample of elegant English. He nowhere violates the proprieties by indulging in that invective which persons of the same convictions, but stronger feelings, might feel disposed to relieve their feelings in. We fear that many of his best points are stated with so much caution with regard to the sensitiveness of those who are responsible for what Dr. Godding evidently regards as a judicial

murder, that they will not be appreciated by superficial readers. To this criticism Dr. Godding cannot reply that he has not written for superficial but for reflecting minds. In his preface he says: "Psychological problems are not considered popular reading, and a treatise on mental disorders is hardly to be recommended as a knapsack companion for the mountain and seaside; but the curious questions that history has left unanswered are always fascinating to a certain class of minds, to none more so than to the idle dreamers who seek refuge from *ennui* at the summer resorts." There is also somewhat of a religious tone in the volume, which may or may not increase its attractiveness as a companion volume for the sea-side and the camp-meeting, and which would not appear so well in place if it were intended for a strictly medical publication. It seems as if Dr. Godding believed that the experts for the prosecution might be held accountable for their opinions in a "hereafter." If he also believed that he could get them to express contrition, by this intimation, he is—if we are correct in our estimate of these men—profoundly in error. That a religious scientist is not necessarily a sanctimonious hypocrite, we are very ready to admit, but it is nevertheless true that the loudly urged pretence of religiousness which fell from the lips of several of the prosecuting witnesses in the Guiteau trial, combined as it was with a prompting of the counsel as to the religious beliefs of the opposing witnesses, and an attempt to coin capital out of religious prejudices in a scientific question was, to say the least, a very suspicious and unprofessional procedure. The honest religious as well as the honest agnostic witness will scorn to air his religious belief or disbelief on the witness-stand. And the agnostic who does not conceal his being an agnostic, is apt to be a more reliable and truthful, because a less timid witness than he who professes a belief in that which he really despises.

With Dr. Godding's scientific statements a scientific critic would find it difficult to disagree, but in his statements regarding several of the medical witnesses he has evidently misapprehended their position somewhat, without, however, doing great injustice anywhere. Indeed, considering the heated scenes of the trial and the likelihood of a bias forming in the mind of the looker-on, this book is one of the most impartial reviews of the matter we have seen.

It is better, after carefully framing one's convictions, to have

the courage to announce them like Dr. Godding, and then one can close its announcement with such a sequel as the following, which would, perhaps, meet the requirements of the case even if it were not tinged by a religious tone: "And now, with the last proof-sheets of these outlines, strangely delayed, lying before me, comes the tidings of the end. This was in keeping with all the rest. With a firm step and an upturned eye he went away, and while the notes of a weird chant lingered in the air, with a paraphrase of the prayer of prayers on his lips, and the exultant yell of the mob arising without, he took the appeal 'beyond these voices.' Perhaps not in vain, for that mind which saw through a veil comprehended not; even as that brain acted through thickened, clouded membranes."

E. SCHWEKENDIEK. UNTERSUCHUNGEN AN ZEHN GEHIRNEN VON VERBRECHERN UND SELBSTMÖRDERN, MIT ZWEI AUTOGRAPHISCHEN TAFELN. Würzburg, Stahel, 1882. (Researches on Ten Brains of Criminals and Suicides.) p. 61.

The author made a careful examination of ten brains of suicides and criminals to test the assertions of Benedict with regard to the atypy of the criminal brain. In opening his descriptions he calls attention to the importance of not alone identifying the various gyri and sulci on a single hemisphere by the aid of the ordinary guides, but of also comparing them with those of the other hemisphere, inasmuch as a more typical course of a sulcus or gyrus on the one hemisphere will show that an insignificant sulcus or gyrus of its fellow is often the representative of an important typical one, crowded away, perhaps, by a redundant and supernumerary gyrus.

His conclusions are as follows:

1. These brains *are* irregularly developed.

2. We cannot yet assert that there is a criminal type as Benedict claims.

3. We cannot assert that there is any "reversion" in the criminal brain, a theory also advanced by Benedict.

Before proceeding to analyze his own cases, Dr. Schwekendiek reviews the entire discussion of the mooted question raised by Benedict, and while it cannot be denied that any question, no matter how intrinsically stupid it may be, may serve to stimulate research and inquiry in a new and untraveled direction, yet one

cannot avoid the reflection that the in fact unfounded, in logic ridiculous assertions of Benedict have led to a serious waste of the time of reliable thinkers, and of valuable space in scientific periodicals. Dr. Schwekendiek's summary of this discussion leaves hardly a rag to cover the nakedness of the theory of the Vienna neurologist. There is a sort of tragical interest attaching to the appearance of this able review at this precise moment, when anatomical dilletanti, to whom some mysterious providence, probably not unallied to the personal proclivities of Professor Benedict's American *alter ego*, assigned the Guiteau autopsy, have just gotten through nauseating the capable neuro-anatomist and pathologist with a search directed to "confluences," omitting the most important procedures of a cerebral autopsy under the ban of a trans-Atlantic sensationalist. It may not be uninteresting to our readers to call attention to some of the chief points in the controversy.

Pansch, a leading anthropologist, and one who is noted for his studies of the anthropoid, human adult and fœtal brain, condemns Benedict's startling statement that the criminal brain fills the gap between the human and the carnivorous brain, as superficial and of no value, because Benedict did not pay any attention to the development of the brain. As to Benedict's further claim that a "four convolution type" is characteristic of criminals, and which, by the way, was apparently adopted as a standard of criminality by the gentlemen whom the mysterious providence above referred to placed in charge of the examination of Guiteau's convolutions, the following damaging facts are cited: 1st, Luschka long ago called attention to the fact that usually the upper frontal gyrus is subdivided into two folds, frequently anastomosing with each other; 2d, Hanot, who examined eleven criminal brains, found the "four convolution type" in but four, while his colleague, in a large number of examinations, did not find *a single instance* of what Benedict alleges to be an anomaly, but which is undoubtedly a normal occurrence, and in our opinion a sign of a higher brain development, if anything. Attention is also called to Meynert's sarcastic critique of Benedict's third claim, that the cerebellum being uncovered in criminals, this pointed to a defective development of the occipital lobes, and hence indicated the absence of a moral sense. Meynert urged that as the occipital lobe was more massive than the frontal lobes in monkeys, the human race had probably degenerated in its

moral nature, if Benedict were correct. It would have been more legitimate, perhaps, for Meynert to have directed attention to the technical errors of which Benedict was guilty, and which are evident from a glance at his photographs. It seems that he rested his brains on the tray, causing them to settle down, thus flattening the inferior face, allowing the hemispheres to slide forward, and crowding the cerebellum backwards. In short, Benedict was guilty of the same error of which the reviewer accused the Philadelphia comparative anatomist, Chapman, and which must be held responsible for the latter's statement that his anthropoid apes had the cerebellum partly uncovered, a statement which was speedily put to the test of a plaster interior cast of the crania of the very specimen Chapman had examined, and thus shown to be incorrect. Notwithstanding the indefensible arguments for, and the sarcasm of Meynert against, the view that the moral sense is located in the occipital lobes, yet there are many observations which seem to support the idea that the occipital lobes are intimately related to the higher perceptions, and, therefore, of necessity to the highest abstract qualities of the mind.

On the whole the author before us is inclined to attach no direct weight to the anomaly most frequently found by himself in the criminal brain, and which curiously enough is a reproduction of an anomaly observed thirty years ago in a murderer by Huschke. This was an interruption of the middle of the precentral gyrus. He is rather disposed to attach an actual bearing on criminality to the pathological lesions found in several of his cases and others recorded in literature. These are of a character to stagger one's views of responsibility. Decaisne found, in a beheaded murderer, opalescent and milky discoloration of the cortex itself. Flesch, in another, diffuse opacities of the pia. The author discovered extensive meningitis and a haemetoma in one of his cases, epilepsy co-existing, in another extensive meningitis and a cortical cicatrix corresponding to a cranial injury. To call such brains criminal brains is as strange a procedure as that of Ferrier, who published a paper on a criminal brain, on perusing which more carefully we found that the subject had been an inmate of the criminal insane asylum at Broadmoor.

Evidently the influence of Flesch, under whose direction Dr. Schwekendiek carried on his investigations, is responsible for the latter's confounding the lesions of insanity and the question of criminality. Thus he refers to a case where the great falx was de-

fective, to others where there were synostoses and wormian bones, and repeats the assertion of Flesch without criticism that these anomalies cannot be considered of any direct bearing on the cerebral functions. A careful study of the writings of alienist pathologists would have undoubtedly been of advantage to Dr. Flesch, his pupil and to many who are now dabbling in this question!

The author's general conclusions are substantially that many of the gyral anomalies found in his criminals correspond to those found by Benedict. But with regard to Benedict's chief claim that "confluences" were characteristic of the criminal brain, just the reverse was found to be the case. He partly agrees with Benedict in saying that the brains of criminals are atypical, but narrows down this admission to only a part of the criminal class, and asserts that the value of the anomalies found remains to be established after a more complete study of the variations of the normal brain has been made. Neither a "confluent" nor any other common type of the criminal brain exists, and there are no sufficient grounds for considering the criminal brain a reversion.

It seems almost incredible, but it is a fact, that Dr. Schwekendiek publishes the details of the gyral anomalies in his ten objects, without stating which are the suicides and which the criminals, much less what the circumstances of the suicides were, what motives they had, or whether the criminals were habitual ones. Indeed, if the criminal or suicide who had a fracture of the skull, a scar of his brain and an extensive meningitis, is to rank as a type of what his criminals and suicides were, Dr. Schwekendiek's researches have as much bearing on the question of criminality as Ferrier's observation. The absence of a life history of his subjects deprives the monograph of any positive value, though the author has done good analytical work in exposing the pretensions of Benedict.

While penning this review, we received several pamphlets[1] from the prolific pen of that writer, which serve to characterize the fairness of his argumentation, if not the balance of his judgment, in a manner to confirm what we said in opening the review. In the most recent of these publications Dr. Benedict takes advan-

[1] "Ueber den heutigen Stand der Anatomie der Verbrechergehirne;" and "Zur Naturgeschichte des Verbrechens;" the former read by Dr. Benedict before the Vienna Legal Association in January, 1880, and based somewhat on the latter, read in December, 1875, before the same body.

tage of the fact that his audience is mostly composed of lawyers to make the most bewildering assertions. Confronted with the fact that the French criminal crania show an elongation of the occipital bone, while his magyaro-sclavonic criminals exhibited a shortening of that very bone, the shrewd guesser holds this up as a confirmation of his atavistic theory, inasmuch "as the French murderer's skull represents a reversion to the prehistoric dolichocephalic cranium of the Gaul, while his skulls represented a reversion to a brachycephalic type."

We trust that we shall have no further occasion to revert to a question which, at least in the complexion in which it arose, may be considered buried by that crowd of rational critics of whom Dr. Schwekendiek is evidently one.

DE LA PARALYSIE GÉNÉRALE ET DU TRAUMATISME DANS LEURS RAPPORTS RÉCIPROQUES. (General Paresis and Traumatisms in their Reciprocal Relations.) By CHARLES VALLON. Paris: 1882.

This is a little brochûre that is intended to bring out prominently the etiological relations of cranial injuries to general paresis of the insane. The author attains his purpose by citations from different writers—all of whom are, of course, French, with the exception of Skae, as well as of Meyer, who is, however, cautiously taken only upon the French Voisin's recommendation—and the narration of some cases of his own; and the result has undoubtedly been to make certain vexed questions much plainer than they were before.

The conclusions to which M. Vallon attains are quite numerous. He believes that cranial injury, with or without fracture or wound of the cerebrum, may produce general paresis, even when there is no hereditary predisposition. It is difficult to deny this proposition in the face of a case like this:

"A man of 50, without any previous sickness or vestige of mental disease, of blameless heredity, received a violent blow upon the head in attempting to separate two individuals who were quarreling. The blow knocked him down, but he returned to his occupation during the day. This was on the 7th of August. On the 8th he suffered from his head, was sad, downcast, and had not recovered his usual gayety. No appetite. On the 9th, slept little, disturbed dreams. On the 10th, a little excitement, pa-

tient talks more than usual ; is contented with everything, and leaves the house often to go to town and make purchases for which he has no need ; he wishes to acquire two horses, a voiture ; in the evening he goes to town smiling, and entertaining every one with his grand projects and the enumeration of his riches. This patient manifested in time the usual symptoms of general paresis—the contracted and unequal pupil, the fibrillary tremor, etc.—and died of it."

And M. Vallon gives some other similar cases. But his cases will not always bear analysis when he attempts to prove that the symptoms coming on months or years after the trauma are due to that trauma, for the very simple reason that the cutting of the patient's umbilical cord or any other antecedent event might just as well be selected as a cause. M. Vallon is learnedly of the opinion that because general paresis of traumatic origin manifests itself among persons at the age when this malady is usually developed, therefore, in his own phraseology, " this seems to indicate the necessity for its development of a certain consensus of the organism ; " which is an unfortunate slip of the pen, by-the-bye, because if trauma can only produce general paresis at this favorable age, it looks very much as if the age had quite as much to do with the matter as the trauma. And the question very naturally arises as to whether the age was not the predisposing cause; and the trauma merely the exciting one. M. Vallon alleges that traumata occurring to general paretics hasten the course of their malady, a fact which his cases fully attest, and which we recommend to the attention of those alienistic enthusiasts who are trying to out-Pinel Pinel in the way of non-restraint. Practically it may often be of importance to ascertain this traumatic origin of general paresis in order to be able to reassure families of the mental safety of children born before the injury ; and in all head injuries the prognosis should be modified accordingly, and all possible proper preventive measures taken. M. Vallon finally has his cases to support his statement that injuries of the soft parts will, in general paretics, whether followed by suppuration or not, exercise a most favorable influence upon the disease, nay, even arrest it ; and thus he explains the success of setons, and applications similar in principle. He does not consider surgical operations contra-indicated in paretics, and union by the first intention may be obtained.

THE PHILOSOPHY OF INSANITY, CRIME AND RESPONSIBILITY. By HENRY HOWARD, M. R. C. S. L., Eng. Montreal: Dawson Brothers, 1882, p. 145.

We presume that this little volume owes its origin to the discussion prompted by the execution of Hayvern, an alleged lunatic, to whose remarkable trial we referred in the May number. It is certainly an interesting *causerie* on some of the most important problems of psychiatry, and the insight as to the real nature of insanity displayed on every page, and the enlightened views held by the author with regard to the question of the criminal accountability of the insane, lead us to hope that the appearance of this work may mark a turning point in American psychiatrical literature. Such a turning point has long been a desideratum; we regret to say that American periodicals and articles devoted to insanity have thus far, with few praiseworthy exceptions, been the toadies of public sentiment, the instruments of narrow-minded criminal jurisconsulists, and indeed anything and everything that is commonplace, paradoxical and meretricious, but as remote from the scientific as a thing can well be. There is a peculiar fitness in the appearance of such a work as Dr. Howard's at the present moment. Those who write books and pamphlets on the subject of the criminal responsibility of the insane do so very frequently from the standpoint which they have occupied in some particular trial, and it is, therefore, well for him who undertakes to pronounce judgment on a book written from such a standpoint to analyze the motives of its author, and his record as an expert, if he have one. We may, for example, safely assume that if the leading "expert for the prosecution" in the Guiteau trial had written a work on criminal responsibility shortly after he pronounced Walworth insane, he would have instructed the callow law-clerks, who look up with gaping admiration to whatever comes from an asylum superintendent, that a little saliva found on the pillow which a given subject had rested his head on is a clear proof of epilepsy, insanity and irresponsibility. The same expert, after having testified in the Guiteau trial, would have taken somewhat different ground; he would have taught the same circle—and doubtless his teachings would have been as enthusiastically greeted—that neither delusive opinion, morbid egotism, perversion of the logical faculties, morbid projects, imbecility of judgment nor moral perversion, nor all of them in their aggregate, are

evidences of insanity. Nay, we do not hesitate to allege that the more strictly psycho-pathological emanations from the same quarter would display similar will-o'-the-wisp guides to the inquiring mind. A few years ago leucin precipitates artificially produced and photographed at a certain asylum were alleged to be the essential lesions of all forms of insanity, and, in fact, the criterion of the insane brain. The superintendent of that very asylum did not only pronounce Guiteau sane, but also alleged that he was shamming insanity at the time of the trial. After Guiteau's death the same bodies alleged by this gentleman to be the criterion of insanity were found in Guiteau's brain. The result can easily be foreseen; these bodies will now be as unblushingly alleged to be the criterion of the sane brain as they were previously asserted to be the lesions of insanity. It is this kind of special pleading which merits the designation of "psychological immorality" so appropriately employed by a writer in the editorial columns of the *Journal of Mental Science* with regard to the Lamson case, and so unwarrantably placed in juxtaposition to a discussion adverse to the defence *in re* Guiteau.

Applying the test above alluded to, to the three cases in which Dr. Howard acted as an expert, we can only say that rarely has a medical witness been so thoroughly justified by events as has Dr. Howard. As far as a *post-mortem* examination is calculated to serve as a test of insanity, the revelations of the Hayvern autopsy fully bore out the author's assertion made at the time of the trial that Hayvern was suffering from some early taint of imbecility, and of that character which is frequently associated with epilepsy. Stronger proof of the truth of Dr. Howard's position than any *post-mortem* evidence could ever constitute was furnished in another criminal case, where he pronounced the accused insane. We quote from one of the numerous marginal notes scattered through the book: "During the early part of the sitting of the Court of Queen's Bench where the unfortunate Hayvern was tried, same judge presiding, the same lawyer prosecuting, a man of the name of William Bulmer was tried for having premeditatedly and with malice aforethought discharged a pistol at the foreman of the establishment in which he was employed, with the felonious intent of doing grievous bodily harm. * * * I visited the man in prison, carefully examined his features and his manner, spoke a few words to him and pronounced him insane. These facts, when the man was on trial, I stated to the court and

jury. * * * My friend, Dr. Robillard, Government Inspector of the Insane in the prisons of Montreal, differed from me. He did not think the man insane at all, nor that he had acted from an irresistible impulse. Of course none of the jail officials saw anything insane in the man's conduct while in prison. * * * Well, notwithstanding my friend, Dr. Robillard's evidence, the evidence of the jail officials, his Honor's charge and the intelligent jury's verdict, the man was mad, mad as a March hare, suffering from acute mania, and I knew it, but I could afford to bide my time. I knew that time would justify my diagnosis. But has it? Yes, the man, after being kept in the Montreal jail in a state of insanity from September, 1881, to June, 1882, has been sent by order of the Attorney General to the Lunatic Asylum at Longare Point. * * * I said my friend, Dr. Robillard, was Government Inspector of the Insane of the prisons of Montreal. Now his duty is to recommend the insane that he finds in the prisons to be removed to the asylum,so I presume it was at his recommendation that Bulmer has been sent there. Of course, for a few days after the trial, public opinion, through the papers, approved highly of the verdict, of the wisdom of the bench and the intelligence of the jury, in giving no heed to the plea of insanity and that most dangerous doctrine put forward by Dr. Howard of irresistible impulse. If such a plea was allowed, every scoundrel that wished could shoot down his neighbor, and then plead irresistible impulse. Much more of such nonsense was written, which was not very complimentary to myself. I hope, now, that public opinion will express itself through the same medium, the press, and acknowledge its error, and that it will be a lesson to public opinion in future not to interfere in matters that it knows nothing about."

It seems to us that Canadian journals must be differently edited from those in the United States, if a professional man can afford to be sanguine enough to expect them to acknowledge an error! *Apropos* of the remarkable *dementi* experienced by the medical officer who pronounced Bulmer sane, and was later compelled to send him to the asylum himself, the following quotation from a paper, reproduced by Dr. Howard in full, may not be amiss: "It must be remembered * * * * * * that in Canada, as in the United States, politics determine appointments to medical positions in jails, and that as a rule mental derangement is not first noticed by the jail physician, but by the keeper, who naturally requires tremendous evidence to make him believe that a

convict, ill physically or mentally, is not feigning." In Germany it has been proposed, and we believe that in many sections the proposal has been carried into effect, to employ asylum attendants as jail-keepers, in order that the latter may be competent to observe the conduct of their charges, with an eye to the mental state of the latter.

Dr. Howard, whose standing as an expert has received the endorsement furnished by such significant denouéments as those of the Hayden and Bulmer cases, opens his work with an attempt to distinguish between the congenital and acquired mental defects. This differentiation is analogous to that proposed by Krafft-Ebing, of the "Psychical Degenerative States," under which head he reckons Primary Monomania, Epileptic and Hysterical Insanity, as well as the *Folie Raissonante*, from the "Psycho-Neuroses," such as Simple Mania, Melancholia and the Secondary States. It rests on a discrimination very similar to that existing in the mind of Schüle, when he speaks of insanities which are the manifestations of a defective brain, and insanities attacking a brain previously intact (rüstiges Gehirn). Dr. Howard differs from these alienists by classifying original monomania, such as that present, for example, in Guiteau (to the existence of mental derangement and irresponsibility in whose case he unreservedly commits himself), with imbecility, which he divides into several grades. He, with Dr. Nichols and others of the earlier and more conscientious among the alienists who really studied their patients, considers original monomania to be an "imbecility of the first grade," and not, strictly speaking, an insanity. He considers such cases as insane, however, when in addition to the teratological defect an active, morbid process attacks the brain. Strictly speaking, Guiteau would have been both imbecile and insane under these views.

It cannot be denied that on first sight this theory is an attractive one. The fundamental factor in original monomania is defined by no term so well as "imbecility of judgment." But is it not true that the systemized and unsystemized delusions, as well as the morbid impulses sometimes displayed by such patients, are rather positive and constructed symptoms, than symptoms of mere deficiency or of subtraction, as which we are accustomed to regard imbecility? Where is the line of separation between the teratological defect involving the vasomotor centre and determining the "gesteigerte Reizbarkeit," the congenital epilepsies and

the "*folies circulaires*," and those teratological defects existing with original monomania and some cases of moral insanity and sexual perversion? And if these defects can be discriminated between, is not their close relation shown by the so-called "transformation" of one of these forms into the other in the course of hereditary transmission? Nay, do we not have the hereditary insanities not reckoned by Dr. Howard as imbecility, frequently complicated by those which may be ranged under this group? Finally, is it not best for all these reasons, whether we retain the term imbecility or not, in the wide sense in which it is used by Dr. Howard, to place the whole group of imbecility under the general conception of insanity, retaining its separate sub-position nevertheless? The links of connection between imbecility and ordinary insanity are too numerous and involve too intrinsic factors to allow of their being ranged side by side; one must be incorporated in the other, if any weight is to be attached to the current definitions of insanity.

In his first chapter, which he entitles "A Rational Materialistic Definition of Insanity and Imbecility," Dr. Howard assigns to Psychiatry its place among the natural sciences, and enters into an entertaining discussion of the analogy between the principles of zoölogy and those which should govern a study of insanity. A few assertions made in the course of this discussion are not strictly accurate; thus (p. 14), he says: "Comparatively speaking, man has the largest brain of any animal; man's front brain, which is its most intellectual part, is the largest part of his brain, and it is the smallest part in the lower animals." Now, in proportion to the weight of the body, the marmoset monkeys, some of the rodentia and even the smaller birds, have a larger brain than man, it would be, therefore, more correct to say that of animals of the same approximate size man has the heaviest brain. The front (fore) brain is not the smallest part in the *lower*, but in the *lowest* vertebrates. It would be unjust to dwell long on these inaccuracies, as doubtless Dr. Howard's authority may have misled him; Bastian, for example, is full of similar inaccuracies.

The Doctor lays great stress on the existence of low temperatures in the insane; certainly there are some remarkable observations in this direction, although they have been chiefly made in the cases of terminal dements and epileptic and other imbeciles. The instances recorded by Dr. Howard would seem to show that in acute mania the early stages of paresis, hysterical

mania and raptus melancholicus, the axillary temperature may run down to 95°. This question should be tested in the light of L. C. Gray's observations of temperature variation in normal subjects.

In the second chapter, or rather part of the work entitled "The Medical Jurisprudence of Crime and Insanity," the author incorporates the paper of Dr. Osler on the "Brains of Criminals," whose value we deem decidedly impaired by its resting on the utterly fictitious conclusions of Benedict, as the latter also impaired the value of the in every way dilletantic study of the gyri of Guiteau's brain. This is followed by the quotation in full of the very valuable paper of Dr. Kiernan on the Hayvern case. That writer, in his justifiable detestation of the "confluences" and "four convolution type" adopted by Osler from Benedict, seems to have overlooked the importance of the true atypical findings in the Hayvern brain, and Dr. Howard properly differs with him on this head.

The views on the responsibility of insane criminals are, on the whole, in full consonance with medico-psychological teachings. We cannot, however, close our eyes to the fact that, tinctured perhaps by the loudly-trumpeted theories of Benedict, our author is over apt to suspect a teratological defect in the criminal merely because he is a criminal. While differing in general from what appear to be his radical views on this head, we will admit that it is impossible to go through any large prison without finding many subjects presenting indications of heredity. We were particularly impressed on one of our visits to the New York city prison with seeing two subjects presenting crossed cranial and bodily asymmetry, evidently of a congenital character, both of whom were "old cases." On the whole, however, we believe the habitual criminal to be in greater part the creature of his surroundings; in others, solely of his circumstances. The subject, however, requires more extended and faithful study than has been given to it, and the interesting volume before us, which notwithstanding a number of curious typographical errors, presents a handsome appearance, is undoubtedly an important contribution to that study.

SOCIETY PROCEEDINGS.

PROCEEDINGS OF THE NEW YORK NEUROLOGICAL SOCIETY.

Seventy-ninth Meeting, October 3d, 1882.

A regular meeting of the New York Neurological Society was called to order at a quarter-past eight in the lesser hall of the Academy of Medicine on the evening of October 3d; the President, Dr. E. C. Spitzka, occupying the chair. There were present Drs. Birdsall, Brill, Dana, Farrington, Hardy, Harwood, L. C. Gray, G. Hammond, McBride, Putzel, Spitzka, Weber, Dwinelle, Girdner, Roberts and others to the number of about twenty.

The minutes of the previous meeting were read and approved. The President then stated, as a matter of privilege, that he had discovered that, in ruling Dr. W. Hammond's motion relating to the minutes read at the last meeting out of order, he had made an erroneous decision, and he felt bound to publicly recognize this, notwithstanding the fact that his erroneous ruling had been sustained by members of the Society.

The report of the Council was then read by the Secretary. It recommended for membership Drs. M. Josiah Roberts and Geo. W. Jacoby. It also reported as dropped from the roll for persistent delinquency in fulfilling the financial requirements of the Society, the following names: E. P. Brown, S. G. Cook, G. F. Daly, E. W. Hoeber, E. F. T. Horst, R. W. Taylor, B. F. Westbrook, J. B. Mattison and J. G. Cardner.

The report of the Council was adopted unanimously. The following gentlemen recommended for membership at the previous meeting were then elected by ballot cast on motion by the Secretary: N. E. Brill, R. T. N. Osborne, A. T. Muzzy, H. W. Berg and C. Adam.

Dr. E. C. Spitzka then exhibited a patient, suffering from a post-scarlatinal insanity, premising the exhibition with the following history :

"Louisa W——e, aged nine years, a native of the United States and of Irish parentage, was taken sick on the 23d of January with an attack of scarlatina, which began with vomiting, was followed by high fever and an extensive exanthema. Her disease was due to contagion derived from a brother, who died on the first day of her discovered illness, of a malignant variety of the same disease. On the day of his funeral she became frantic and wildly excited; and during the desquamative period of her illness she had a fit, lasting three hours, which, as far as can be judged from the description of the parents, resembled a *status epilepticus* with delirium. Immediately after desquamation a joint affection supervened. This involved both knees, ankles and the soles of the feet ; the right lower extremity was more severely affected than its fellow, and the patient lay in bed with the right leg flexed. A contracture ensued, the leg being flexed on the thigh at an angle of about eighty degrees. The joint affection was accompanied by heat, swelling and redness of the affected joints, but not by any constitutional symptoms noticeable to the relatives. Following this was a period, during which the medical attendant is stated to have described the child as suffering from cardiac paralysis. Her appetite seems to have been good throughout.

"A day before Good Friday the girl experienced an attack, marked by muscular spasms, introduced by loud screams, and accompanied as well as followed by unconsciousness, which seemed to yield to the application of peripheral stimulants. In the forenoon of Good Friday three epileptiform convulsive seizures were noted with which there was nystagmus, but no conjugate deviation. In the evening a fourth fit occurred, from which she emerged in a maniacal condition. This maniacal attack lasted twenty-one days, and the mental condition was rather one of furor than of exaltation ; she was destructive, tearing her clothes, biting and scratching her relatives; was unclean, and had hallucinations of a sister who had died of scarlatina a few days after the death of her brother referred to.

"Her appetite now began to fail. Remarkably enough not a single epileptiform attack occurred from the date of the one mentioned as inaugurating the maniacal period on Good Friday, viz. : until May 15th, when such attacks followed each other in rapid succes-

sion from Friday until Saturday, and were relieved by peripheral irritants. A few days later the fits recurred, and continued to occur several times daily until June 21st. At this date Dr. N. E. Brill saw the patient, and observed no less than six distinct attacks in about fifteen minutes.

"Since her attack of maniacal furor her mind had been clouded, did not know her name at first or recognize persons; later (July), without being asked her name she would respond to salutation in a sing-song voice, saying: 'My name is Louisa W——e, and papa W——e, and mama W——e and baby W——e.' She is cruel to the other children, with the exception of the infant, for which she expresses an exaggerated affection, and regarding which she entertains the fear, morbidly expressed, that it may be taken away from her. In answer to questions she uniformly responds 'flees,' and there is evident amnesic aphasia with word-deafness. She is very secretive, and hides all small articles she can lay her hands on. On asking her to count from a dial, she called figure one—second—immediately corrected herself to first and continued as follows: 2—second, 3—third, 4—six, 5—seven, 6—eight, 7—nine, 8—ten, 9—eleven, 10—twelve, 11—thirteen, 12—twelve, 13—sixteen. She performed many acts automatically, sometimes arising at half-past four in the morning and dressing herself.

"On June 22d I saw the patient, who had up to this time had from two to fifteen convulsions daily, latterly with conjugate deviation to the right. On my recommendation she was put on drop doses of the one per cent. solution of nitro-glycerine, administered five times a day. On June 24th she was seen again; had had no fits since the nitro-glycerine was commenced, but has become more vicious, although intellectually she has undoubtedly improved. She can now speak short sentences connectedly, enunciate words more plainly, and is more communicative. She was ordered two and a half grains of bromide of sodium and one grain of chloral hydrate, morning and noon, and the double dose in the evening. On July 1st she seemed brighter, had had no fits to date, but was still more vicious and wild, striking and pinching all within reach, except her infant brother and strangers. On asking her to count from a dial, being stopped at 'twelve' and the finger being pointed to 'six' she said 'thirteen,' and so went on saying 14, 15, 16, 17, 18 and 19 for 7, 8, 9, 10, 11 and 12. Her appetite appeared to be improving. On July 3d it was noted that her pupils, which, in the beginning of the malady and up to the time of the

nitro-glycerine treatment had been widely dilated, were still in that condition. On July 13th her memory was carefully tested and found to have greatly improved, the girl spoke connectedly, and presented a curious kind of fits; these consisted in spells of choreic agitation of the head and upper extremities, lasting a few seconds and occurring about ten times daily; excitement provoked and intensified these movements. The patient was placed under increased doses of bromides, with which Squibb's fluid extract of conium in doses of from five to ten minims was employed. On August 24th her pupils were found more contracted, showing normal response to light, though not as mobile as formerly. I have observed this same change in epileptics who had been kept under nitro-glycerine for long periods. There was at this time no aphasia, the girl had become as rational in behaviour and conversation as most children of her class and age, was responsive, attentive and communicative, regained the memory of old and picked up new facts readily, and up to the date mentioned had still had no epileptic or epileptiform attacks, that is for a period of over two months. She was also no longer aggressive, and pinched others only when attacked. Without the knowledge of Dr. Brill, who had continuous charge of the case, the administration of the nitro-glycerine was discontinued for a week; at the end of that time she developed another series and class of seizures. These consisted of an aura of several seconds duration of violent epigastric pain, during which she repeatedly struck her abdomen, an exclamation and a convulsive clasping of her mother in an agony of fright; without any evident loss of consciousness. During these seizures the pupils remained unaffected; they occurred from twice a day to twice a week, and until last week in apparently diminishing frequency. At the next examination in August she manifested rudimentary delusions of grandeur, strongly tinged with imbecility. She claimed to be as big as her parents, but on interpellation and reflection admitted that her father might be taller, but insisted that she was of the same dimensions as her mother. She has again been vicious, and attempts to excuse her treacherous attacks on the ground that they are retaliations for injuries, which, there is every reason to believe, are, in great part at least, fictitious. She said that she did not pinch her parents to hurt them, but as a manifestation of fondness. The expression of her countenance on saying this was quite blank, so that it was difficult to say whether she was deliberately

and consciously mendacious. Thus her condition continued with improvement in the scope and strength of her intellect, and the disappearance of her absurd notions and diminution of her moral perversion until September 30th, when 'baby W——e' of which the patient as related had been extravagantly fond, died of a dysentery. Louisa then had a paroxysm of anxious furor, tore her hair, screamed, tried to pull the corpse from the coffin, and thus carried on for hours, necessitating her removal by force. Shortly after Dr. Brill found her comparatively quiet, rather obtuse and stupid for the first time since he had seen her, failing to recognize him. Previously she had gotten so far as to write the numbers to ten, now she stopped at eight, and when asked to write nine, wrote seven.

"I now recollect that on one of the several occasions on which I examined the patient, the conversation taking a direction towards the death of her brother prior to her illness, and plain terms being used so that she could understand the subject of conversation, she became very anxious, and made violent symbolic protestations against the suspected removal of her remaining brother, so that I ceased speaking of that subject.

"Dr. Brill has failed to find any cardiac anomaly, and to anticipate several questions which sometimes are asked, I will say that no sphygmographic, electrical or craniometrical examinations were made. The latter I regret having omitted, for, judging by the eye, it seems to me that the frontal region of the cranium has increased in width if not in height, since I first saw the patient."

The patient being asked her name, said, "Mary;" on being asked whether it was not "Louisa," she said "Louisa;" prior to the meeting, and on being asked before the Society, recollected her first name correctly, but was unable to give the family name; her pupils were widely dilated, imbecility was manifest, and she still displayed the contracture referred to in the history. The reader thought that the joint affection might be safely excluded as an etiological factor, and the interesting question remained for discussion, which had occasioned him some doubts whether the insanity was post-scarlatinal or post-epileptic. He had decided in favor of the former.

The discussion was opened by Dr. Weber, who asked whether inquiry had been made as to any existing luetic taint. Dr. Spitzka replied that that question had been thoroughly canvassed, with a negative result. Dr. Weber then said that he did not see anything

specifically distinct in scarlatina as a cause of insanity, and that such cases as he had seen and as the one exhibited appeared to resemble the mental disturbances following typhus. The speaker then related two cases observed by himself; the first was that of a boy, Henry H——, 3 years old; physically well developed; mentally not very bright, with no hereditary taint; was taken with scarlatina last May. Although there were no marked localizations, the fever continued at a very high rate for the first two weeks; became more moderate in the third week, the thermometer ranging from 100.5 to 102.5 in the mouth, but did not leave the patient until the end of the fourth week. In the course of the fifth week he became convalescent. From the twentieth to the twenty-eighth day of his illness he showed frequent twitchings and slight convulsive movements of muscles of face, as well as extremities. He had forgotten his name, and would not remember it for more than a few minutes after being told. Nevertheless, he made a complete but slow recovery; and when I saw the patient again in the early part of September, I found him in a normal state of health.

Dr. Weber believed that the symptoms of disturbed action of the nerve-centres in the above case, dependent probably upon malnutrition of certain regions of the brain, and, therefore, were mainly due to the influences of the continued fever, not to any specified action of the disease as such. The second case bearing upon the subject under discussion was not a pure one, since it concerned a patient with a bad family history as to insanity.

Celestine G——, 44 years; French; married; multipara. Her paternal grandfather died in an insane asylum; one of her sisters became demented, but is still alive. She is reported to have been perfectly well up to her fifteenth year, when she passed through a severe attack of scarlatina. Soon after recovery she showed signs of mental disturbance, and had several seizures of acute mania, of short duration, before she was twenty. At the age of twenty-two she married. In the course of her married life she had four children; had puerperal mania after each of her four deliveries; of the last attack, four years ago, she had not recovered, and is now an inmate of the asylum on Blackwell's Island.

Dr. Gray asked whether the temperature had been taken. Dr. Spitzka stated that no record was in his possession prior to June 21, when Dr. Brill first saw the patient; since then it had been taken irregularly, and found at no time varying from the normal. Dr. Gray rejoined that in such cases it would be well to take the

temperature regularly, inasmuch as any intermittent type might thus be discovered. Dr. Spitzka replied that because the nervous and mental symptoms developed in such close proximity to the scarlatina, and there was no distinct rhythmical type in the attacks, he had excluded a malarial element altogether. Dr. Gray explained that he had not intended to refer to any malarial feature as a possible contingency of the case, but to a possible intermittent type in general. He believed that in a few years we would find that a number of obscure affections had a distinctly intermittent course, and yielded to the proper exhibition of quinine.

Dr. Putzel asked how word-deafness was determined to exist in this case? The relator replied by saying that the child, when an article was suggested by symbolic hints, would readily point it out or bring it, but failed to do so when it was only named. Dr. Morton, who occupied the chair during this discussion, said that he presumed the reader had asked himself the question why this mental disorder was post-scarlatinal and not post-epileptic; he would like to hear the reasons for his decision.

Dr. Spitzka closed the discussion, saying that he agreed with Dr. Weber that there was nothing specific in scarlatina as a cause of insanity; he had merely named it post-scarlatinal to indicate to members more accurately the etiology of the case. All the post-febrile and rheumatic insanities had features in common, and it so happened that in the scant literature of post-scarlatinal insanity he had been unable to find any case as closely resembling that of Louisa W——e, in the mental features, as one related by Marcé of insanity after typhus in a thirteen-year old girl. He believed, too, that the pneumonic, rheumatic and post-febrile insanities generally had a common pathology in two directions. In the one, the most favorable in its prognosis, there was simply extreme nutritive exhaustion of the nerve-centres, the so-called "Geisteskrankheit aus Anaemie" of Scholz; in the other there was an extensive migration of lymphoid and other cells crowding the perivascular and peri-ganglionic spaces of the nerve-centres, as well as the neuroglia. This occurrence had been determined by Popoff for typhus, and by Hoffmann and others for variola and scarlatina. His reasons for not considering this case one of epileptic, but of post-febrile insanity, complicated by convulsions, were, first, the fact that, aside from the mental deterioration, there were positive manifestations of insanity of characters different from those of post-epileptic insanity; second, the absence of any characteristic

sign of post-epileptic insanity; third, the improvement of the mind notwithstanding the continuance of the epileptiform attacks; fourth, the fact that the mental disturbance was developed in connection with the very first attack, and was most intense then, which is altogether exceptional, if it ever occurs in epilepsy; fifth, the correspondence in its general features, notwithstanding many aberrant ones, of this case with the recorded cases of post-febrile insanity. The reader was aware of the doubtful features of the case, and had wished that some affirmative issue had been raised with regard to the differential diagnosis by the members. It seemed to him worthy of note that just as a severe emotional strain had been a marked feature prior to the development of the psychosis, a similar cause had sufficed to provoke the present relapse.

Dr. L. C. Gray then read a paper on the subject of "Laryngeal Vertigo."

DR. GRAY'S PAPER.

In February, 1880, there came to me a man, P. E.———, aged 55, who stated that about a month before he had begun to have a cough, and that when it was severe he would lose consciousness for a short time. There was no history of any convulsive movements whatever. These coughing spells were always preceded by a burning and tickling sensation at about the level of the larynx. A thorough laryngoscopic examination was made by my friend, Dr. Thomas R. French, and nothing abnormal was discovered. In 1863 he had been wounded on the head by a bullet, which ploughed up the tissues over the skull from brow to vertex, somewhat to the right of the median line. He was shortly afterwards affected with losses of consciousness similar to the present ones, and they continued for about two months. During this interval he has had "colds" innumerable, but never any vertigo or unconsciousness. Under treatment with the bromides he had no return of the losses of consciousness, but he was only under my charge about three weeks, and since then I have seen or heard nothing of him.

Mainly to the clinical acumen of M. Charcot is it that we owe the recognition of a malady which has not yet been, so far as I know, described in American medical literature, the Laryngeal Vertigo of the distinguished French teacher, or, as I prefer to call it, for reasons which I shall adduce, *Laryngeal Epilepsy*. On the 25th of September, 1876, Dr. Julius Sommerbrodt published an

account of a highly interesting case of losses of consciousness and convulsions, seemingly caused by an intra-laryngeal tumor[1]; and on the 19th of November of the same year Prof. Charcot narrated several similar cases to the Société de Biologie, one of which he had seen fifteen years before[2]. In 1878 Dr. J. R. Gasquet made public another case[3]; and M. Charcot returned to the subject, with additional patients, in 1879[4]. The number of cases thus far published has been six. They are of sufficient novelty and importance to be given in detail, I think.

Dr. Sommerbrodt's case runs thus:

Mr. N.———, of W.———, 54 years old, came to Dr. S.——— in June, 1874, and stated that he had been hoarse since 1867, in which year he had been thoroughly wet through at a fire. In other respects he was a healthy, large, well-nourished man. Laryngoscopic examination showed a polypous neoplasm of no inconsiderable size. It so lay upon the left true vocal cord that its long axis covered this cord by more than one centimetre in length and by more than an average breadth of a half centimetre, leaving the most posterior part only uncovered, reaching one-half over the rima glottidis, the other half being upon the ventricle of Morgagni, or the left false vocal cord. Consistence of the neoplasm was hard; surface unevenly rough; color reddish-gray. Larynx otherwise healthy. Voice very hoarse. No disturbance of respiration appreciable to patient. Patient would not consent to an operation. In the ensuing winter of 1874–'5 the hoarseness increased, and a shortness of breath became perceptible. From February, 1875, there began, at first with intervals of weeks, generally at night, attacks of clonic convulsion, with unconsciousness, foam at the mouth, biting of the tongue. After one of these attacks, towards the end of March, there remained a paresis of the left arm and leg, as well as in the region of the facial. At the instance of his physician, patient betook himself in June to Marienbad and tried the springs there. The epileptic attacks did not decrease; of the left-sided paresis only a vestige was left. The dyspnœa steadily increased, the epileptic attacks grew more intense, often several in a day; they were also evoked by the drinking of wine or beer. No effect was ob-

[1] Berlin, Klin Woch. 25 Sept., 1876.
[2] Revue des Sciences Med. Juillet, 1877, p. 135.
[3] Practitioner, August, 1879.
[4] Progress Médical, No. 17, 1879.

tained from potassium bromide ordered by Prof. Biermer in July. The attacks came nearer together, were marked in August by longer periods of unconsciousness, and left great exhaustion behind them. A feeling of an aura was never noticed; confusion of mind and general lassitude were constantly present, memory impaired. Patient finally consented to an operation. A laryngoscopic examination, made September 12th, 1875, displayed an entirely different condition from that of the preceding June. The neoplasm had grown considerably, and had evidently sunken by its weight into the rima glottidis, which it nearly filled. The left vocal cord was connected with the tumor by all of its edge except a few millimetres of its most posterior portion; bordering upon the right vocal cord was the lateral free edge of the polypus; the posterior laryngeal wall was nearly reached by the broad, free end of the growth, so that it presented itself from above in the form of a triangle, with the apex in the anterior commissure. Between the broad base of the tumor and the posterior laryngeal wall there remained only a small space for the passage of the air, whilst right and left there were larger ones. In marked expiration the tumor slipped somewhat to the left and above. Its posterior third was covered with fine papillary excrescences, whilst the remaining portion had an uneven but smooth surface. In phonation the left vocal cord retreated under the tumor. Patient had the last attack on September 10th, and this time, as often before, after he had lain for some time at night upon his back. Dr. Sommerbrodt came to the conclusion that the tumor was the cause of the epileptic attacks. The first five days were consumed in a vain attempt to encircle the tumor with a snare, modified after Bruns' pattern. Use was, therefore, made of a laryngeal knife, flatly sickled-shaped, ground like a herniotome, provided with a button; and with this a cut was made parallel to the edge of the left vocal cord, and a small, half-bean-sized piece of the growth removed. The next day the whole tumor was cut off smoothly down to the vocal cord, with the knife held in the left hand; the patient at once spat it out. Only a shred of tissue was left in the vocal cords bordering the anterior commissure. Very little bleeding. The tumor was a fibroma, 1.5 centimetre in length, 0.6 centimetre greatest width and 0.9 centimetre height. The shred of tissue was removed some ten days afterward. Immediately after the operation the patient experienced a delightful feeling of free respiration. The constant confusion of mind disappeared in a few days. The

speech was hoarse for the first few weeks, and some five months after was perfectly clear, at which time there was not a trace of new growth. But the most important fact was that, at this period, there had not been any recurrence of the epileptic attacks. When the antecedents of the patient were carefully looked into, it was ascertained that some fifteen years before he had been subject to a short series of epileptic attacks, which were then attributed to a cicatrix in the dorsal surface of the right hand, and which disappeared after the excision of the cicatrix.

Prof. Charcot's account is as follows :

A patient, subject to articular rheumatism, suffered also from a spasmodic cough. One day, during a paroxysm, M. Charcot saw him suddenly sink down and almost immediately raise himself, without presenting the least trace of convulsion. The patient, who mentioned that he had not completely lost consciousness, also stated that he had had these attacks from time to time ever since the beginning of the spasmodic cough. The patient, aged 55, had never had a symptom of epilepsy.

In August, 1876, M. Charcot saw, with Dr. Caresme, a patient, M. H———, aged 55, who, also epileptic, complained of having been subject for the last year to what he called "attacks." The "attack" is announced by a tickling a little above the larynx, and accompanied by a slight dry cough, when suddenly the patient loses consciousness and falls down. During this attack, according to those who are present, the face becomes violet, turgescent, and there are occasionally produced several convulsive twitchings of the face and one of the arms. There is no biting of the tongue or involuntary micturition. The attack is of very short duration, and has scarcely terminated before M. H——— rises, without hebetude, able to renew the conversation which had been interrupted. The attacks had become quite frequent for some time ; there had been fifteen in one day, and the patient had begun to fall down in the street. Every time the attacks were preceded by the tickling and slight cough ; but it would happen that attacks of coughing would not be followed by the loss of consciousness or falling. M. H——— has had chronic bronchitis, with emphysema, for a long time, but only during one year had the tickling, the spasmodic cough and the attacks shown themselves.

M. Charcot has been led to think that in cases of this kind the point of departure of the symptoms is possibly a particular irrita-

tion of the centripetal laryngeal nerves. There is here, indeed, a sort of laryngeal vertigo, comparable in certain respects to the vertigo of Meniére, which appears to be connected with an affection of the nerves of the labyrinth. Under this impression he prescribed pharyngeal cauterizations with nitrate of silver, irritant applications to the anterior region of the neck, and the internal use of potassium bromide in large doses. Whether from the medication or some other cause, the patient was cured in several weeks.

M. Charcot has since had occasion to observe several cases of the same clinical nature.

Dr. W———, born in Russia, is about 40 years old. Some twelve years before, after having been plunged, during the winter time, up to the waist in water for upwards of an hour, he was attacked with generalized articular rheumatism, which kept him in bed for nearly three months. Shortly afterwards there appeared a bronchial affection, which, at first acute, soon became nearly constant. Incessant oppression, sibilant râles which could be heard at a distance, difficult expectoration. Frequently there were violent paroxysms of asthma, which generally terminated by the expectoration of tubular sputa. During the year 1877 these attacks were reproduced some ten times. Aside from the asthmatic paroxysms, and without appreciable cause, the patient would suddenly experience a little below the larynx, along the trachea, a peculiar feeling of very painful burning and tickling, and shortly afterward would come a paroxysm of coughing; then, very rapidly, succeeded a vertigo, and also immediately M. W——— felt the fingers of his left hand flex involuntarily, the left upper extremity stiffen into extension and elevate itself as one piece to the height of the head, at the same time that it was also agitated throughout by three or four clonic movements. At this moment M. W——— lost consciousness; on reviving, a few seconds after, he always found himself on the ground, reposing on the left side. The extremities upon the left side presented no anomaly, either in mobility or sensation, between the paroxysms described. The feeling of burning and tickling, and the premonitory cough, were, upon several occasions, followed only by some whistling inspirations, a feeling as of suffocation, and thus the attack was completed. A laryngoscopic examination, made by M. Fauvel, showed only a little abnormal redness of the mucous membrane of the organ. Dr. W——— died very rapidly,

with full consciousness, without convulsion, during the course of an attack of asthma.

M. G———, aged 55, was attacked on July 20, 1878, by a bronchitis that presented no abnormal characteristics, and which was easily cured, but left behind, at the level of the larynx, a nearly constant feeling of burning and tickling. These sensations would suddenly become worse from time to time, and were followed by very painful paroxysms of coughing. In the course of the month of August, M. G———, being in bed, was awakened by one of these paroxysms ; he got up, almost immediately lost consciousness, and revived a few seconds later to find himself lying on the floor. From this period these attacks were repeated very often, occasionally as many as three or four in one day. During these the patient invariably lost consciousness and fell down ; he fell several times in the street. He rose almost immediately, without marked confusion in his ideas, but retaining no remembrance whatever of what had occurred during his fall ; he recalled only the laryngeal tickling, the cough and the vertiginous feeling which had preceded it. According to the account of persons who had been present at these attacks, the face became sometimes, at the moment of the fall, turgescent and slightly violet-colored; there were from time to time some convulsive movements in the face and in the extremities ; no initial cry, no urinary emission. The patient had never bitten his tongue ; at the moment of revival there was neither nausea nor emesis. Laryngoscopic examination, made by Dr. Krishaber, showed no lesion whatever, either in the cavity of the larynx or in that of the trachea. Such was the condition of affairs when M. G——— consulted Dr. Charcot, in December, 1878. He prescribed potassium bromide in large doses, and the application of flying blisters to the region of the larynx. After three weeks of treatment the attacks had completely disappeared.

Dr. Gasquet gives this history :

P. J———, an admiral on half pay, had always led an active, temperate life, and had excellent health until three years ago, at the age of 70, he caught a severe cold, which settled in his throat, and led to violent spasms of cough with urgent dyspnœa, repeated several times a day. A little later he became subject to attacks which he thus describes : He would instantaneously lose consciousness and fall to the ground ; after (as he has been told by his family) two or three minutes he would revive, but felt giddy

and confused for some little while. This seems to have been the invariable order of the attacks, in which no convulsions, cry or, in fact, any other symptom was ever noticed. He was supposed to be suffering from some uncertain cerebral disease, from epilepsy or from stomach-vertigo, for all of which he was successively treated, but with no effect. After a time he observed that these attacks (which occurred at very irregular intervals—sometimes several times a day, sometimes not for weeks) were always preceded by irritation in the larynx and spasmodic cough; which, however, were most frequently not followed by loss of consciousness. He put himself under treatment for the laryngeal affection, which gradually yielded; and at the same time the attacks of loss of consciousness ceased, none having occurred for the last nine months.

The term "vertigo" seems to me to be a misnomer for these cases, in all of which consciousness was entirely lost, and in many of which there were convulsive movements. They are notably unlike the vertigo of Meniére, to which M. Charcot compares them, because in the latter there is generally only vertigo and not unconsciousness. To be sure, they differ radically, so far as we yet know, from the typical epilepsy in the important particular of being so readily amenable to simple treatment; to be sure, also, it is well to spare patients the mention of the name of the most dreaded of all the neuroses; but yet scientific nomenclature has a higher purpose than the conciliation of patients, and the word "epilepsy," used in its more catholic sense, as Dr. Hughlings-Jackson employs it, when speaking of all sudden actions of nerve-cells, describes these phenomena, to my thinking, far better than any other at our disposal. Moreover it is a fair question to ask as to whether these phenomena occur in individuals who are not either personally or hereditarily epileptic or neurotic. In Dr. Sommerbrodt's patient there was a distinct history of either epileptic or convulsive tendencies, some fifteen years before. Professor Charcot does not allude to this point in two of his four cases; nor does Dr. Gasquet; and I am sorry to confess that the matter also failed to attract my inquiries. Even in those of M. Charcot's patients, for whom a non-epileptic history is positively affirmed, there is nothing to indicate that any effort was made to ascertain the presence or absence of hereditary epileptic, convulsive or neurotic tendencies. Nor is the disappearance of the symptoms after treatment an argument against this view. For

when we again analyze M. Charcot's four cases, we find that in two nothing is said concerning the length of time during which the patient was under observation, the third died suddenly, and the fourth was treated only for three weeks, whilst Dr. Gasquet's admiral was observed for some nine months. Three weeks and nine months are not intervals of sufficient length to be conclusive, even as regards epilepsy, for it is not uncommon for epileptics not under medical care to pass one year and more without a convulsion, whilst in those of merely convulsive or neurotic tendencies these interregna may be indefinite ; indeed, Dr. Sommerbrodt's patient, who was unquestionably a predisposed subject, was exempt from his attacks for five months after the removal of the tumor.

The researches of MM. Féréol and Jean would tend to show that while an organic irritation of the laryngeal nerves may produce violent and spasmodic cough, this is not necessarily accompanied by loss of consciousness. These two authors [1] have observed cases of locomotor ataxia in which laryngeal symptoms would occur, of such intensity as is herewith described by M. Féréol :

"A spasmodic and violent cough, very intense and of strange character. A current of air, a cold body like a marble chimney-piece, or the copper-knob of a door, a strong odor, the sulphur of a match, for example, an article of food too hot, sufficed to provoke it ; sometimes it even occurred during sleep or in the midst of conversation without cause appreciable. The patient would then be seized with an obstinate cough, suffocating, in terrible paroxysms succeeding each other with rapidity, followed by harsh inspirations analogous to those of pertussis ; the face became injected, the eyes protruded ; urine and even fæces were involuntarily expelled during the most violent efforts of the cough. The expectoration was nil or slight, and composed of salivary strings or of mucous sputa tinged with blood. During the attacks the patient experiences vertigo, a dazzling of the eyes, and atrocious pains along the vertebral column and in the shoulders; finally, there is extreme fatigue, and a feeling of oppression, which does not, however, resemble asthmatic dyspnœa. The attack can sometimes, when it is isolated and passing, be ar-

[1] Féréol, Gazette hebdom, 1869. No. 7, p. 109. Jean Ibid, 1876, No. 27, p. 426.

rested at the onset by the following method : the patient suspends respiration as much as possible, then resumes it with much care and gentleness. Auscultation furnishes no sign in proportion to this formidable array of symptoms. A slight sibilance, some sub-crepitant râles, or only a little harshness of respiration are all that is heard."

M. Jean was fortunate enough to obtain an autopsy on one of these rare cases. Besides an unquestionable posterior sclerosis, the left pneumogastric was greatly atrophied, whilst the right retained its normal size. The left recurrent laryngeal was very small. The muscles of the larynx were normal in volume and color. The left inferior vocal cord was markedly atrophied. The left thryo-arytenoid was somewhat wasted.

Why was it that these long-standing organic lesions, evoking much more violent spasm of laryngeal muscles than in the instances of the so-called laryngeal vertigo, did not induce loss of consciousness or convulsive movements? The temptation is great to assume that it was for want of predisposition. This does certainly seem the more probable when it is remembered what an amount of direct violence to a nerve is required in order to produce unconsciousness. Dr. S. Weir Mitchell [1] gives an account of 56 gun-shot wounds of the brachial plexus and its branches. Of these only ten fell unconscious, seventeen fell conscious, and twenty-nine walked away.

At the conclusion of the paper, Dr. G. Hammond rose and asked in what respect the cases quoted by Dr. Gray differed from "Jacksonian epilepsy," except as to location of the irritable periphery. He had himself exhibited a patient to the Society some time ago, who, on having his side rubbed, or his cheek shaved or even experiencing a cold draught on that cheek, would have vertigo, and exhibit a tendency to fall, after which he recovered and continued speaking, resuming the thread of his previous conversation.

Dr. Gray said that it was precisely because he considered it erroneous to separate laryngeal vertigo from other epilepsies that he had read this paper. He thought "Jacksonian epilepsy" like "laryngeal vertigo," a misnomer.

Dr. G. Hammond stated that such cases did not differ apparently from the epilepsy provoked by a piece of glass in the hand or a grain of sand under the toe-nail. Dr. Gray, however, thought

[1] Injuries of Nerves. Phila. 1872. p. 140.

it noteworthy that the laryngeal epilepsy was so readily relieved, as Charcot claimed, while the other epilepsies of peripheral origin were not so readily relieved ; this Dr. G. Hammond thought due to the fact that in the former case the irritating cause was accessible and easily removed ; where it was as accessible and removable in other parts of the body, as for example, in case of a grain of sand under a toe-nail, this epilepsy was as quickly curable as the laryngeal variety.

Dr. Putzel remarked that he never had heard the term " Jacksonian epilepsy " used in the sense in which it had been used that evening. He thought it was limited and generally understood to be so limited to gross lesions of the motor convolutions. Such cases as Dr. G. Hammond related had been described by himself as reflex epilepsies, and under the same name before him by Eulenburg.

The President asked whether any member present was able to enlighten the Society as to the first author who had used the term " Jacksonian epliepsy," and thus to furnish a basis for intelligent discussion ?

Dr. McBride said that Hughlings-Jackson particularly disclaimed the limitation of the term to the conditions mentioned by Dr. Putzel. Jackson had described as applying to all epilepsies a hypothetical discharging lesion, and as a characteristic feature of some epilepsies, the sensory aura with unconsciousness. Dr. Putnam, of Boston, who had been in London recently and who had become familiar with Jackson's views, had called the attention of the American Neurological Association to their correct interpretation in a paper. Dr. Putzel here interposed, saying that the term was employed not by Hughlings-Jackson, but by others. Dr. McBride insisted that Hughlings-Jackson considered the designation and its use a misrepresentation. Dr. Putzel replied that only at the last meeting of the International Medical Congress Hughlings-Jackson had accepted the term, and given a number of cases of "Jacksonian epilepsy " with gross lesions. The President asked Dr. Putzel whether he was certain that Jackson used and accepted the term under dispute, and Dr. Putzel replied that he had done so to his best recollection. Dr. Birdsall was of the impression that Jackson had more specially called attention to cortical irritation in general as a cause of epilepsy, and Dr. McBride confessed to having the same impression. Dr. Spitzka did not think a tumor of the brain was a variety of epilepsy, but a

tumor *with* epilepsy. Dr. Morton agreed with the reader of the paper as to his restriction of the term vertigo, but did not think it fair to quote Meniére's disease in the manner he had done, as there were certainly cases of Meniére's disease described by Axenfeld and others as the apoplectic form, with which there was loss of consciousness.

Dr. Gray closed the discussion by disclaiming any intention of misrepresenting the views of Jackson, whose theory had been improperly made the basis of a special denomination of epilepsy; and that he was perfectly well aware that Meniére's disease was sometimes associated with unconsciousness. The parallel he had drawn was with cases with which unconsciousness did not occur. The main point he had wished to bring out was that in calling the new affection "laryngeal vertigo" we gave prominence to a subsidiary phenomenon instead of to the true nature of the disease, which seemed to be that of a genuine epilepsy.

Dr. Weber then related a case of laryngeal crisis in a tabetic patient where the attacks appeared to be provoked by the contact of saliva, a bolus of food or a drink of water with the laryngeal aperture.

There being no further business, the Society adjourned at a quarter of ten o'clock.

Eightieth Meeting, November 7, 1882.

A regular stated meeting of the New York Neurological Society was held on the evening of November 7th, at a quarter-past eight o'clock, in the lesser hall of the New York Academy of Medicine, Dr. Spitzka, the President, occupying the chair. There were present Drs. Græme Hammond, Lente, Wm. A. Hammond, Farrington, L. C. Gray, Weber, Dana, Putzel, Hardy, Wm. J. Morton, Brill, Amidon, McBride, M. P. Jacobi, and as guests Drs. H. Knapp, Milbank, Swift, Milhau, F. A. McGuire, Parsons and others.

The minutes of the previous meeting were read and approved. There being no reports of committees or of the council, the names of Drs. M. Josiah Roberts and G. W. Jacobi were submitted as those of candidates for election. On motion, the Secretary cast the vote of the Society in their favor, and they were declared elected.

Dr. Spitzka then proceeded to demonstrate some specimens of artificial precipitates produced in brain tissue by the employment

of alcohol, following with an exhibition of sections from the frontal lobes and corpus striatum of the executed assassin, C. J. Guiteau. He remarked substantially :

As early as February 5, 1877, at a meeting of this Society, in a paper entitled the " Psychological Pathology of Progressive Paresis," I referred to the production by alcohol of artificial precipitates in brain tissue. I further stated that artefacts thus resulting had been described as lesions of paretic dementia, under the designation of a miliary sclerosis. In a later paper entitled, " Reform in Scientific Psychiatry," read in March of the year following, I based criticisms of asylum pathology in this State on the allegation of such artefacts, and in a sequel of this paper read October 5th of the same year, I challenged the American Association of Asylum Superintendents, offering to produce the lesions on which the so-called results of the Utica and Oshkosh laboratories were based at will in the brains of men or animals previously ascertained to be healthy. That challenge, most of you may know, was not accepted, nor was it noticed. Subsequently, in a paper published in the Chicago *Medical Review* of June 20, 1880, I gave a detailed account of these artefacts, including remarks on their chemical nature, to be hereafter referred to.

I have been thus explicit in referring to these old publications, because it has, unfortunately, become necessary for me to assert my claim to a priority in observation, which cannot, I think, be disputed. It is, perhaps, not so remarkable that Dr. Savage, one of the editors of the *Journal of Mental Science*, should read a paper before the International Medical Congress, in the summer of 1881, in whose abstract I fail to find any notice of the previous discovery and description by an American writer, as it is surprising that a publicatiou should emanate from a member of this Society dealing with these bodies, and ignoring the fact that they had been previously and abundantly noticed at our various reunions.

In my latest paper dealing with this subject I made the following remarks, which still apply to the matter in hand :

" When the brain or cord of any animal is submitted to the action of absolute alcohol a sufficient length of time, a peculiar series of changes occur, simulating lesions, but which can be produced at will in the healthiest human and animal brains. In the first place, alcohol has been long known to extract *leucin* from nervous tissues, and I have found crystalloid, or subcrystalline

spheres of *leucin*, scattered more or less regularly through the tissues or accumulated in the perivascular areas of healthy brains submitted to the action of alcohol. By varying the length of exposure, or by immersing the brain, or different portions of the same brain, at different stages of *post-mortem* change, in alcohol, these artificial 'lesions' may be pleasingly varied. That these bodies are *leucin*, or at least chiefly consist of *leucin*, is demonstrated by their chemical reaction. Among the tests which can be conveniently applied are their insolubility in ether and chloroform, and difficult solubility in alcohol (requiring 1.040 parts of cold and 800 parts of hot alcohol); the bodies do not stain in carmine, and are refractive. Overstaining sections containing these bodies in carmine, and particularly in hæmatoxylin, does stain the latter; ordinary staining fails to do so. This feature varies, probably according to certain admixtures; besides, they are either hyaline or show a radiatory striation.

"As I have stated, variations in the external conditions may possibly have something to do with variations in the composition and appearance of such bodies.

"Now the observer who has not had his attention called to these precipitates before, and who, finding them in the brain of some subject dying from a degenerative brain affection, or from some disorder like hydrophobia or delirium, symptomatic manifestations presumably associated with intense molecular and biochemical transformations, may be excused for jumping at the conclusion that these bodies represent *bona fide* lesions. But when, as in the asylum under consideration, the same 'change' is found in such different affections as general paresis, subacute mania and chronic melancholia (cases 2, 3 and 5 of the text), it becomes evident that as little reflection has been exercised as when *destruction* of nerve-tracts is considered to be the basis of hallucinations.

"In the text the writer [1] of the paper names them 'granular bodies' (p. 10), '*grumous* granular matter' (p. 17), 'encysted morbid products' (p. 21), 'colloid bodies' (p. 23), globules 'of a fatty nature' (p. 27), and the fact that he has found such deposits in such different forms of insanity, has evidently furnished the grounds for the following statement:

'A fact which seems of the utmost importance is the similarity of histological changes attending the different forms of insanity,

[1] Dr. John P. Gray.

as represented in the microphotographs, and indeed in all cases which have fallen under observation. If such regularity is displayed in future investigations, as I am strongly led to believe will be the case, this fact will practically confirm the principle, that in insanity we have to contend with *only one* DIATHESIS, manifesting itself under different phases in its progress and results. The reflection forces itself on the reader, that if the same artificial lesions were manufactured to order, as it were, in every other class of diseases, that it would be an equally just inference to refer all somatic affections to only one diathesis.'

Referring to a paper by Dr. Kempster in the Wisconsin State Medical Society Transactions 1877, pp. 43-58, I said:

"On page 51 is an excellent description of the artificial precipitates: 'Just how these spots originate is not yet well settled. They have been supposed to originate in the nuclei of the neuroglia or nerve glue, which fastens the nerve fibres together, and which consists of a delicate structure made up of cellular material, but compact and strong. I am not prepared to state that they do not originate there, but from certain specimens in my possession, and which I will show you, it will once occur to you that the white substance of the brain must be principally made up of nuclei of neuroglia, and that there is little room for anything else, as the field of the microscope is completely covered by these small masses. They are from the 1-500 to the 1-4000 of an inch in diameter, are clear, of a grayish white color, and have no perceptible centre or nucleus; the margins are distinct, and they maintain their individual relations notwithstanding the fact that they are sometimes found closely pressed together. In these minute growths I have failed to find any evidence of any known tissue, notwithstanding that they have been subjected to a prolonged and critical micro-chemical manipulation.' Others, which I have repeatedly produced in the brain of a healthy dog, are described as 'miliary sclerosis,' regarding which he gives the following, more than remarkable, explanation: 'Another peculiar feature observed, which I will allude to here, but speak of more fully hereafter, that is, that these large masses are found in tracts of nerve tissue previously affected with true sclerosis; and when they are found in sclerosed tissue the spot is not fibrous. When found in tissue not sclerosed they are fibrous. * * * * It is not unusual to find crystals lying upon the surface of the spot, but these are not at all characteristic and found in the normal brain

tissue after treatment with alcohol.' One step further, and a little more of judicious comparison, and the writer would have discovered the true nature of the 'lesion.' He has the excuse of a precedent for his error, however. Some of the 'lesions' described can be produced in the brain cortex after an examination of the tissues in the recent state has shown it to be healthy, and it can be produced by using alcohol on one specimen, while specimens from the same convolution hardened in bichromate of potash, or other re-agents than alcohol, fail to show it. What Dr. Kempster describes at the bottom of page 43, is the earlier stage of the same artificial precipitates which, in the middle of the same page and the first paragraph of the next, he describes as lesion of a different kind."

The reader here exhibited specimens of artificial precipitates of the kind referred to, produced at will, and also a plate accompanying Dr. J. P. Gray's paper, containing microphotographs of such bodies, alleged by him to be lesions of insanity. He then continued:

The main significance of these descriptions to-day consists in the fact that the medical officers of both the Utica and the Oshkosh asylums swore not only that Guiteau was not insane, but also that he was shamming insanity. They further swore at his trial that the microscope always demonstrated visible brain disease in insanity. Indeed they had both previously committed themselves to such a view in print (contradicting every real authority), the superintendent of the latter asylum using the following strong language:

"Even in the most recent cases of insanity, although the change may not at once be detected by the unaided eye, the microscope reveals the change and unerringly points out the seat of disease."

Take in connection with this the fact, which will be made evident from the specimens to-night, that the same bodies, photographed at both asylums as the essential lesions of insanity—the same bodies on which Dr. J. P. Gray bases his theory that insanity is the result of one diathesis, and that they represent the basis of hallucinations and delusions, were found in the brain of Guiteau!

It is not necessary for me to say that if any member of the New York Neurological Society were in the predicament of these gentlemen to-day, he would either, if sincere in his belief that these bodies were *bona fide* lesions, hasten to admit that he was

wrong in pronouncing Guiteau sane ; or if shaken in that belief, admit that his statements as to the constancy of pathological findings in the insane, and the genuineness of the bodies referred to, were incorrect or at least premature.

But even members of the New York Neurological Society may become the subjects of a legitimate criticism in connection with the report of the microscopic examination *in re* Guiteau. During the summer, Dr. Wm. J. Morton allowed me to examine a series of sections obtained from Guiteau's brain, and it was but a few minutes before we discovered a pyramidal nerve-cell of the cortex, presenting in a marked degree the evidences of beginning fatty-granular disintegration ; slighter changes of the same character were found in other cells. On the same occasion I called Dr. Morton's attention to the artificial precipitates in the section, which had been noted by the preparers and examiners, without any final opinion as to their character having been arrived at. If my recollection serves me correctly, Dr. Morton recognized the identity between these bodies and those described by myself, and just adverted to, and of which I showed him specimens at the time.

What was my surprise on reading a report, signed by Drs. C. L. Dana and Wm. J. Morton, to find that these bodies were referred to as the result of *post-mortem* decomposition, not the slightest notice being taken of my earlier and repeated description of these bodies in 1877, 1878 and 1880, and before this Society. It is but fair in considering the alleged report, to say that Dr. Morton had no knowledge of its existence until I called his attention to it ; and that his name was affixed to the report without his authority or knowledge, probably under a misapprehension.

As this report stands it incorporates an erroneous view as to the nature of these bodies, inasmuch as its writer regards it an open question whether they may not be the result of spontaneous *post-mortem* changes, whereas they are really due to the imperfect methods of preparation resorted to. The general conclusion is that nothing of note in the way of a morbid appearance, such as is found in insanity, was to be discovered in the sections. Through the kindness of Dr. Wm. J. Morton I was enabled to examine representative sections of all the specimens in the hands of the "committee," and owe to him the set of duplicates herewith exhibited. I find in contradiction to the report, that notwithstand-

ing the tissues are improperly preserved, indifferently hardened, so badly cut (in consequence), and so poorly stained that a positive statement that the actual tissues were normal would in itself appear suspicious, that there is not a healthy section among them. I have marked a few spots for reference, and should be very happy to exhibit them to any gentleman interested or to any committee that the Society would name, in day-light; our available illumination to-night I regard as inadequate. It is remarkable to what extent the discoverable lesions in the specimens constituting the basis of Dr. Dana's report correspond to the description furnished by the officially authorized committee, whose report was drawn up by Dr. Shakespeare, of Philadelphia. The vascular, as well as the cellular changes described in the "Shakespeare report," can be discovered not in isolated examples, but in profusion everywhere throughout the sections obtained from Dr. Morton.

I am also able to exhibit to the Society this evening, through the courtesy of Dr. Shakespeare, a specimen from the frontal lobe, and one from the corpus striatum of Guiteau. These sections were prepared by Dr. J. C. McConnell, of the Army Medical Museum; a glance will show that they are beautifully cut; the staining might have been a little deeper, or possibly the method of preservation prevented the staining of the ganglionic bodies as deeply as one might wish to see them stained. The atrophy of the outer cortical layer is evident in this section, though it is difficult to say how much this appearance may be intensified by a cellular infiltration of the outer zones. The lesions of the blood-vessels are distinct and intense, one of the long arterioles particularly shows the kinking and corrugation, as well as the residua of old and recent hemorrhages in its adventitia, common with the chronic insane, in the most typical manner.

It was not my intention this evening to dilate on the signification of these appearances, or their bearing on the individual case in which it was my fate to become, without any provocative act, a confessedly most interested party. Nor do I intend that this communication shall elicit a discussion of the general questions of the trial, of the mental state of Guiteau, or even of the hypothetical bearing of such lesions as those represented in the exhibited specimens on mental symptomatology. I desire simply to present facts and criticisms which may be tested to-day and to-morrow on the basis of facts. I have selected a Society, and naturally this one, as the medium of communication, because I

could thus best insure a fair hearing and a full re-criticism in the presence of facts.

At the conclusion of these remarks Dr. W. J. Morton, who occupied the chair during the demonstration, rose to make an explanation. He thought that the use of his name was perhaps natural, although really due to a misunderstanding on the part of Dr. Dana. With that gentleman he had gone to Washington, and in common with him had prepared a report on the surface appearances of Guiteau's brain. He had detected evidences of what appeared to be a morbid condition in the sections made, and had remarked this; subsequently he had, pursuant of a promise previously made, taken all his sections to Dr. Spitzka, and on the first glance at the specimens the latter had discovered and called his attention to the artificial precipitates exhibited that evening, and to the plates of the paper, as well as the lesions referred to. There had been no communication between Dr. Dana and himself about the signing of the report, and he (Dr. Morton) had left the city and been at a summer resort during the time the report was made and published, consequently knowing nothing of it.

Dr. Dana then arose, and remarked that the explanation of Dr. Morton left him little to add with regard to the use of Dr. Morton's name. Dr. Morton had gone over the specimens with him, and had, it is true, detected what he thought was a morbid cell, but subsequently he (Dr. Dana) had decided that it was normal. He thought that, as Dr. Morton had gone over the specimens with him and generally agreed with him, that he had been right in using his name, as he had done. The misunderstanding was possibly due to the fact that the proof-sheets he had sent Dr. Morton had not reached him. With regard to the criticisms of Dr. Spitzka, he would say that his report was not based on the specimens in Dr. Morton's hands, or on any prepared in Dr. Satterthwaite's laboratory, but on some which he had prepared himself. He would call attention to the fact that he had in the report affirmed the existence of chronic disease of the minute blood-vessels, adding that nothing was found throwing any light on the question of insanity. In the face of Dr. Spitzka's positive assertions, he would say that he had submitted his specimens to gentlemen who were at least as good pathologists as Dr. Spitzka, possibly excepting with relation to the brain, and they had agreed with him, finding nothing. He admitted his ignorance of Dr. Spitzka's prior description of the artificial bodies noted, but referred this to

the remoteness and inaccessibility of his publications. All he had been able to find was a reference to the transudation of colloid substances in general paresis, and this did not apply to the case before them. He had, also, not claimed that these bodies were the result of *post-mortem* "decomposition," but of some *post-mortem* "change."

Dr. Morton again took the floor, and referred to the fact that his own position with regard to the micropathology of Guiteau's brain was clearly shown in his publication of the "Shakespeare report," which affirmed decided chronic and diffuse disease of the brain, with editorial sanction and approval in the July number of the *Journal of Nervous and Mental Diseases.*

Dr. Spitzka concluded the discussion by saying that any comparison of the relative merits of himself and other investigators was uncalled for. He had himself said not a word justifying such a comparison, or implying that he had made it himself. He had criticised statements and omissions in the presence of facts, and what he wished to maintain was that the best pathologist would have been unable to make a satisfactory examination of the specimens from which Dr. Dana had prepared his sections, while a less able pathologist would have been in a position to make a good examination of those prepared by Dr. McConnell. He had been under the impression that the specimens had been prepared by Dr. Satterthwaite's assistants, or at his laboratory, because, to the best of his recollection, the laboratory and Dr. Satterthwaite's assistants were prominently mentioned in Dr. Dana's report. Here Dr. Dana interpolated that this was not so. Dr. Spitzka continued, saying that with regard to his criticism of Dr. Dana's omission of priority acknowledgment, that the very paper referred to by Dr. Dana as the only one found by him, was published much less prominently in the same journal which contained the publications referred to. His description there of colloid transudation and vascular stasis referred to a genuine lesion in paretic dementia, and not to artefacts. He thought—while not questioning Dr. Dana's intention of giving due credit in the slightest—that it was in view of the frequent assertion that little original scientific work was done by American physicians, somewhat hard, that when it was performed its priority should not only be unknown across the water to a gentleman like Dr. Savage, the editor of a journal which had reviewed the first of his (Dr. Spitzka's) papers, but also to those residing in the same community. He added that

he would have been less critical on this and other heads if it had not been so strongly apparent to him, that the report referred to would be looked upon as an—however forced—confirmation of the position taken by the *New York Medical Record* in its illogical and inherently contradictory editorials on the Guiteau problems. He concluded by offering to exhibit the specimens and demonstrate the morbid appearances in them to any interested member of the Society, or to any committee the Society would appoint during the week, under better auspices as to illumination.

Dr. Hammond then read the paper of the evening on "The Seat of Instinct." The main argument of the paper was a proposition that instinct resided mainly in the axial nervous structures, such as the spinal cord and medulla oblongata. He cited a large series of facts in support of this proposition. Frogs whose swimming instinct was so strong ordinarily, if the head were cut off entirely, leaving only the cord behind, would not swim, while if the medulla was left intact they would. In a case where the head of a garter snake was cut off, a zoölogist observed that though the animal could not see, it made for a hole in the wall. In some cases, as another zoölogcal observer observed, the instinctive tendencies were so strong as to be actually destructive to the individual. Thus it had been found that over a dozen male frogs were so tightly clustered around a dead and decomposing female, that those in the centre of the mass had perished. The instincts probably resided in the axial part of the nervous system, because in the lower animals where the instincts were best developed these parts enjoyed a relative preponderance over the higher centres; while in higher animals where these latter centres predominated the instincts were less marked. Another group of facts in favor of this view was furnished by the observation of anencephalous monsters. Certain of these monsters had sucked, cried, opened and closed their eyes, although the brain mass was absent. Again we found instinctive tendencies in idiotic subjects, as for example in the case of the imbecile who hugged and nursed a rag baby with all the instincts of a mother.

Dr. Parsons remarked that while many of the facts presented by Dr. Hammond seemed to show that certain instincts were seated in the centres named by him, yet a study of the evolution of instinct in the ascending animal series proved that any organic

need might lead to the development of an instinct which might be seated in a lower or higher centre, according to its complexity.[1]

Dr. Weber did not think that the sweeping conclusions of Dr. Hammond were justified by such isolated experiments as he had quoted. Particularly did he regard it as fallacious that these conclusions should rest on observations of the sexual instinct. This was, perhaps, the strongest instinct in the animal range, and that the frogs referred to were already in the sexual act before the head was removed did not exclude the initiatory activity of higher centres, thus diminishing the value of the experiments. He thought that the brain had a great deal to do with the instincts, and that we were every day getting farther from the ancient view, which established a sort of antagonism between instinct and reason. An example showing elective instinct was furnished by a French observer, who cut a kid out of a goat's belly, put it in a room on its feet, and placed half a dozen vessels containing different ingredients around the apartment. The kid hobbled from one vessel to another and drank only of the one containing milk.

Dr. Gray asked what Dr. Hammond meant by instinct?

Dr. Hammond replied that Drs. Weber and Parsons had both misunderstood his position. He did not intend to imply that emotions were instincts; true instincts had nothing to do with perceptions, they originated independently of any external impression. While Dr. Weber was right as to the details of the kid experiment, he attributed it erroneously to a French observer, whereas it was Galen who had performed it. Dr. Weber reiterated that instinct was ordinarily supposed to be an inherent tendency in the germs. Dr. Hammond insisted that it was independent of external circumstances, as was illustrated by the case of the beaver, who would build a dam across a room, although there could be no purpose or motive for it.

At this point the President begged the Society to suspend the debate. An occurrence for which the word "tragedy" was but a feeble and inadequate expression had recently prostrated one of the most valued members, a former President of the Society. A gentleman was prepared to offer suitable resolutions, and the

[1] We regret that Dr. Parson's remarks, contained in a separate mail package, were either lost or mislaid, and that the discovery of this fact was made so late it was found impossible to repair the defect.

Chair hoped that a motion to suspend the order of business would be made and prevail. Such a motion was, thereupon, made, seconded and duly carried. The Chair then called to the floor Dr. McBride, who read the following resolutions :

WHEREAS, The greatest calamity that can befall man—the sudden destruction of all that which makes life dear—has overtaken Dr. E. C. Seguin, an active member of this Society and the first President after its reorganization ;

Resolved, That this Society expresses to Dr. Seguin, at this time of his great grief and sorrow, its warmest and heartiest sympathies ;

Resolved, That while appreciating how painful it would be to resume work in the community in which such a sad bereavement has occurred, nevertheless it is the earnest hope of the Society that Dr. Seguin will resume or soon return to his scientific and professional labors. As a teacher, investigator and practitioner he has a place which cannot be easily filled.

Resolved, That an engrossed copy of these resolutions be transmitted to Dr. Seguin by the Secretary.

Dr. Wm. A. Hammond moved that these resolutions be adopted, accompanying his motion with fitting remarks. Dr. Gray seconded the motion, which was then put to the Society and carried unanimously.

The debate was then resumed. Dr. L. C. Gray, opening with the words : As I understand, instinct is an idea——

Dr. Hammond : It is not an idea !

Dr. Gray : What is it then ?

Dr. Hammond : It is a force.

Dr. Gray accepted this definition for the purposes of argument, but he thought Dr. Hammond's definition would not fit his illustrations. If instinct was a force originating within the nervous mass independently of any external impression, what was there instinctive in this sense in the action of a decapitated frog, who, when thrown into water, swam, and when coming in contact with a hand placed before him, stopped swimming ? In the one case the contact of the water, an external impression, caused the frog to swim ; in the other, the contact of the hand, also an external impression, caused the frog to stop swimming. And yet these had been cited in Dr. Hammond's paper as instances of instinct. Dr. Gray took a far wider view of instinct. He regarded instincts simply as more limited and lowly forms of intelligence than those nervous actions which we call mind. So far as they go they manifest quite as much adaptation of means to ends as

do the so-called intelligent actions, although they may not be accompanied by consciousness. A frog that swims acts, so far as the swimming is concerned, as intelligently as a human being swimming. A pneumogastric nerve that inhibits the heart acts, so far as the inhibition alone is concerned, as intelligently as a human hand that were to compress the heart between the fingers. The birds of passage seeking warmer climes at the approach of winter act, so far as the migration alone is concerned, as intelligently as the human beings who regularly seek the South before the snow comes. The swimming, the inhibition, the migration are all, so far as we know, unaccompanied by consciousness in these lower orders of beings, but for their particular purposes they are just as intelligent, just as well adaptations of means to ends, as in the higher beings. That the higher beings have in addition a conscious intelligence, and a larger intelligence, and consequently more capability of adapting many more means to ends, does not mitigate against the fact that the lower actions are intelligent, but simply shows that they are less intelligent. Dr. Gray would then regard all so-called instincts as lower and more limited forms of intelligence, differing only from what are conceded to be intelligent actions in this limitation and very probably in their lack of attending consciousness. In this sense instinct is by no means confined to the spinal cord. When a man, going to bed, winds up his watch, and is not conscious that he is doing it, this is certainly a nervous action, unattended by consciousness, in which the cerebrum is concerned, and is in every sense as purely an instinctive action as the swimming of the frog when thrown into water. Every nervous mass in the body, with the probable exception of certain portions of the cerebral cortex, can take part in nervous actions that are unconscious, and in this wider sense Dr. Gray would say that every mass of gray matter in the body was the seat of instinct.

Dr. Putzel thought that Dr. Hammond had done violence to the traditional use of the term instinct. In his opinion instincts were the manifestations of certain inherited dispositions of the nervous system, expressing the transmitted influence of what had in an earlier ancestry been not instinctive but deliberative acts. As to the case of the headless snake observed by Dr. Hammond, it proved too much. And to infer as Dr. Hammond did, because the spinal cord of a frog being destroyed it could not swim, that the instinct of swimming resided in the cord, was

not a necessary *sequitur*, for in this experiment the entire motor nervous apparatus was annihilated.

Dr. Hammond here reminded the speaker that in the first place the case of the headless snake had not been cited as his own observation, and that the fact had either to be accepted or rejected on the merits of the author cited from. As to the case of the frog, he did not think that Dr. Putzel could have been attentive to the paper; nowhere had Dr. Hammond said anything remotely referring to a destruction of the cord.

The Chair asked Dr. Hammond what were the particulars of the case where the brain being entirely absent, the child was able to open and shut its eyes? Dr. Hammond related the case in detail: it was one reported by St. Hilaire from an older observer; the cord began at the level of the foramen magnum. The Chair stated that it would be preferable to question the case to admitting that opening and shutting of the eyes and suction could take place without nerves or a medulla oblongata.

Dr. Hammond: But it does not say here that there were no nerves.

The Chair: According to the laws which govern even aberrant development, the optic, trigeminous and oculo-lomotor nerves at least must have been absent if the nerve axis terminated at the level of the foramen magnum, and to believe that a simple reflex act could take place without the intervention of centrifugal and centripetal tracts and a centre, excluding as we must any autochthonous mechanism in the muscles, was striking in the face of physiology.

Dr. Hammond: But St. Hilaire, the most eminent authority on teratology, accepts this case!

The Chair: He did so doubtless because he regarded the matter chiefly from an anatomical point of view. It is a question if he would had done so from a physiological point of view, and what comment he would have made in that case.

Dr. Dana rose to endorse the statements of Dr. Putzel; he believed the instinct to be a species of inherited organic capacity; in the case of the fly-catcher, for example, this bird on the breaking open of the shell, if a fly darted past, would instantly pounce on, and generally, too, succeed in catching it. In the human being there were no real instincts.

Dr. Spitzka believed the general acceptation of the term "instinct" was that of an inherited tendency—engrafted in the spe-

cies as a whole, and not in the individual—to acts calculated to preserve and propagate the individual for the benefit of the species as a whole. He also believed that a careful scrutiny of facts would show that the statements of Drs. Hammond and Dana, in which, notwithstanding the opposite course of their arguments, they happened to coincide that the instincts were most developed in the lowest forms, were not borne out. The instincts of certain mammals were far more elaborate than those of the reptilia cited by Dr. Hammond. A pointer puppy would point before he knew what pointing meant, before he saw game—nay, even at the sight of a gun. That act was as pure a case of instinct as we knew of, and there was nothing in the reptilian class as elaborate.

Dr. Hammond: But, according to your definition, an instinct is for the preservation and propagation of the species; what has the pointing of a pointer dog to do with that?

Dr. Spitzka: Simply this, that the pointer breed would cease to be a pointer breed if that instinct were lost. Pointer puppies that do not point are drowned, or at least are not allowed to breed with good pointers.

Dr. Dana: Birds, which stand lower than quadrupeds, have the instincts more highly developed than these in many instances.

Dr. Spitzka: What does Dr. Dana refer to as quadrupeds? Both reptiles and mammals have the quadruped character.

Dr. Dana: I should have said mammals, meaning quadrupeds higher than birds.

Dr. Spitzka continued, stating that there were, it was true, no such instincts in the human species as those found in the lower animals, but up to the anthropomorphæ the instincts developed *pari passu* with the brain, being, as a general thing, more elaborate with the higher than the lower forms. Psychically some birds stood higher than the rodentia. The instincts were only the more marked in the lower forms, because, owing to the greater uniformity and monotony of their psychical life, the instincts played a more preponderating rôle with them. The bee has higher instincts than lower insects. In man, where there is more individuality, such uniform instincts characterizing the entire species were not found. There were, however, certain tendencies in the human species, manifesting themselves uniformly in the entire species, or in races, or in families, which were in every respect analogous to instincts. He referred to the "Triebe" of the Germans, a term which had not yet been translated into English.

A remarkable instance of an instinctive act is that of the idiot girl who, delivered of a child, gnawed through the umbilical cord with her teeth. It is well known that this is the method resorted to by the lower animals, and that, superior to ligation, it efficiently prevents hemorrhage. In the case of many carnivores and herbivores the placenta is devoured by the mother; and as illustrating how instincts may be modified, it may be stated that in Scandinavia the mares to this day devour the after-birth, while in England, owing to some stupid stable superstition, the attendants have for so many centuries been in the habit of checking the animal and removing the after-birth that this beneficial instinct has become lost.

Dr. Dana: How do the apes dispose of the after-birth?

Dr. Spitzka: They gnaw the cord.

Dr. Dana: Do they eat the after-birth?

Dr. Spitzka: Not to my knowledge.

Dr. Dana: Then the instinct in this idiot girl would have lapped over a great many gaps?

Dr. Spitzka: How so?

Dr. Dana: Because monkeys not devouring the after-birth and the carnivore doing so.

Dr. Spitzka: Did I say anything remotely indicating that this girl ate her after-birth?

Dr. Dana: I understood you so.

Dr. Spitzka: I am at a loss to explain such an interpretation; my recollection is clear and distinct as to the words I used; I said she gnawed the cord through.

Dr. Dana: I think the case proves too little.

Dr. Putzel: Will Dr. Spitzka explain what he means by "Triebe?"

Dr. Weber: Well, "der Geschlechtstrieb," for example!

Dr. Spitzka: My answer to Dr. Putzel's question will depend to some degree on his answer to the following: How long would two healthy members of our species, who had never heard of the sexual act, live on a desert island without propagating?

Dr. Putzel: I do not refer to such a strong and prominent instinct as that case involves; can Dr. Spitzka mention any others?

Dr. Spitzka: The numerous intellectual and moral "Triebe" which, for example, are manifested in the desire of a child of intellectual parents which has never heard of school, and which is purposely kept from application, to get at the alphabet, even

through the indirect channels of sign-board reading. Such and similar tendencies are morbidly intensified in the so-called instinctive monomaniacs——

Dr. Putzel: But I cannot understand how Dr. Spitzka can include these with the instincts, according to his definition, and say that the "Triebe" are analogous to instincts.

Dr. Spitzka: That is precisely it, on Dr. Putzel's own quotation I did not say they were identical, but analogous, and this is maintained by authorities; it can be found obscurely referred to even by Galton.

Dr. Putzel: I would agree with Dr. Spitzka if he had said "analogous," but I understood him differently.

Dr. Spitzka: Yet it seems Dr. Putzel, in quoting my words, used the word "analogous."

Dr. Putzel: Then it was an addition of my own; I did not hear Dr. Spitzka use it.

Dr. Spitzka: There seems to be little room for doubt on this head.

Dr. Hammond, in closing the discussion, observed that the remarks of all the speakers had drifted from the question of the seat of instinct to that of its nature, and that they seemed to have misinterpreted his points in great part. It served to characterize the discussion that the members who questioned his inferences got over the difficulty by denying or ignoring certain of his cases, such as the instance of the viper and the anencephali. He had also been persistently misquoted by some, and could only believe that certain gentlemen had criticised the paper without really knowing what the author had said. Then Dr. Gray had cited conflicting observations, remarking that instincts were not accompanied by consciousness. Dr. Gray could not mean that

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Dr. Gray: That depends on the definition!

Dr. Hammond (resuming): There seemed to be even with a variation in the terms of the definitions a general uniformity in belief as to what instinct was. The bee with its higher brain had been cited as showing that instincts could be prominent even with high brain development, but it seemed to be forgotten that his paper referred to the seat of instinct in man, and probably no one would assert that the bee had a medulla oblongata—though Dr. Spitzka looked at him as if it had. The cases he had cited clearly proved that certain acts ordinarily regarded as

instinctive were possible when the medulla alone was left intact, and this shows that the instinct resides in the medulla——

Dr. Spitzka: That some instincts may reside there——

Dr. Gray: Did not Dr. Hammond maintain that the mind resided in the cord some years ago? How then does he so sharply discriminate between the mind and the instincts now?

Dr. Hammond: I never maintained that; my paper was written to prove that the brain was not the sole organ of the mind.

Dr. Spitzka: Dr. Hammond referred to an expression of mine, as indicating that the bee might have a medulla oblongata; it has not; but it has a circum-oesophageal ganglion quite analogous to an oblongata.

Dr. Hammond: Yes! And that reminds me that the bee has been cited as showing a high degree of instinct, but it has evidently been forgotten that with its high cerebral structure many of the so-called instinctive may be really intellectual acts, and so it may be with the beaver.

After the close of the discussion, as the hour was advanced, the consideration of a third communication announced, was postponed to the following meeting. The Society adjourned at half-past ten.

NOTE.—We are informed by Dr. Morton that the report of the Neurological Society Proceedings on page 82, lines 2–6, does not represent the meaning he intended to convey. It is not now possible to discover whether the misapprehension arose in a slip of the tongue on the part of the speaker, or a *lapsus calami* on the part of the reporter; but the qualifying clause should be eliminated, in order to justly represent the speaker's intended meaning.

In the report of the discussion on Dr. Brill's paper, Dr. Knapp is erroneously represented as stating that "an accurate *post-mortem* record was not available." The word *not* should be erased, being an addition either of the type-setter or proof-reader.

QUARTERLY REPORT ON PROGRESS IN NEUROLOGY.

PHYSIOLOGICAL CONTRIBUTIONS.

1. Von **Ziemmsen**. Direct Electrical stimulation of the Heart in the Living Subject. Deutsche Arch. f. klin. Med.; editorial in Brit. Med. Journal, July 22, 1882.—**2.** Prof. A. **Eulenburg**. Latent Transmission (Latenzdauer) of the Foot-Clonus (Tendo-Achilles-Reflex). Neurol. Centrlblt, 15 Juli, 1882.

1. A woman was operated upon by Dr. Kolaczek, of Breslau, for an enchondroma of the left anterior chest-wall, which was removed. The heart was thus laid bare. Prof. Von Ziemmsen then received the case into his clinique, and made the following observations, which we excerpt entire from the editorial in the British Medical Journal:

The instruments used for the investigation of the heart's action were Marey's polygraph, cardiograph, transmission-sphygmograph and tambour with a registering lever, Brondgust's pansphygmograph, and Ludwig's symographion; and the drawings obtained by the use of these instruments constitute an interesting addition to Von Ziemmsen's paper. Faradisation of the phrenic nerve was most easily performed immediately below the auriculo-ventricular furrow by means of a button-shaped electrode of the size of a pea and covered with moist sponge, while the indifferent electrode was placed on the sternum or the dorsal spine. The effect of this was a contraction of the left half of the diaphragm, which was at the same time depressed to an extent of about 3.5 centimetres; the right half of the diaphragm descended at the same time to the extent of one intercostal space. Any deviation of the point of the electrode from the course of the phrenic nerve rendered the experiment unsuccessful, while the tetanus of the diaphragm, if once induced, continued of an equal strength throughout the duration of the electrical stimulation. The heart was at the same time pulled downwards and outwards, and re-

mained in this position as long as the phrenic nerve was tetanised. The proceeding did not cause any pain or other sensations ; and the sensitive nature of the nerve-fibres, proceeding from the lower end of the phrenic nerve to the pleura, pericardium and peritoneum, which had been assumed by Luschka, appears, therefore, highly problematical.

The continuous current was used with the same electrode and in the same place ; the indifferent electrode being put on the scapula or the sternum, and the strength of the current being regulated by a Siemens's metallic rheostat, with sixty pairs of Krüger's battery in the circuit. The cathode closing contraction (C C C) appeared with 400 Siemens's units, the anode closing contraction (A C C) with 600 units, and the anode opening contraction (A O C) with 700 units ; while a cathode opening contraction (C O C) could not be produced by the strongest available current. The law of contraction of the phrenic nerve is, therefore, the same as that of the other motor and mixed nerves.

Direct electrisation of the heart led to the interesting result, that the action of this organ may be considerably modified by the continuous current, while the induced current has little, if any, effect upon it, even if a considerable power be used. Whether one or both electrodes were used, or whether they were applied to the region of the ganglia in the auriculo-ventricular furrow, or the ventricles themselves, or the apex of the heart, the induced current did not appear to alter the frequency or rhythm of its pulsations ; nor was any pain or other sensation caused by the application. The skin covering the cavity being anæsthetic, it was possible to use a current of extreme power ; so that if faradisation of the heart could cause pain, the patient must surely have felt it.

The constant current was used either by means of a solid double electrode, the buttons of which had the size of peas, were covered with moist sponge, and could, by the aid of joints, be fixed in any position which might be desired ; or one pole was directed to the heart, while the other was held to the scapula or sternum ; or one pole was connected with two buttons of the double electrode, with the indifferent electrode placed to an indifferent point.

The minimal current-strength, which caused an artifical contraction of the heart, was 800 Siemens's units for C C C, 1,000

units for A C C and 1,200 units for A O C, while no available strength was effectual with C O C. It, therefore, appeared that the formula for the heart's contractions is identical with that obtaining for the other striped muscles. If a higher current-strength was used, the effect was much more striking than with a minimal strength, more especially when voltaic alternatives were used in the metallic circuit.

With a minimal strength, the alteration of the normal rhythm was only temporary and inconstant, there being a sort of struggle between the stimulus of normal rhythmical innervation and the galvanic stimulus, so that sometimes one and sometimes the other was seen to predominate. As soon, however, as a current of from 2,000 to 3,000 units was used, a constant electrical rhythm was established, each single galvanic shock being succeeded by a visible and perceptible contraction of both ventricles. C C C was always strongest, and the normal cardiac rhythm, with a frequency of eighty beats in the minute, was changed into one of higher frequency—for instance, of 140 beats; but any kind of rhythm above the normal could be produced *ad libitum*. The pulse was, therefore, artificially rendered alternate. With a frequency of 180 beats the smaller wave could often not be felt at the radial artery, while when it was 140 the propelling power of the heart was sufficiently great to allow the perception of every single wave in the radial artery. The summit of the very rapid arterial pulses was in general lower than the summit of the normal pulse, and that in direct proportion to their greater rapidity. The same was found to hold good for the sphygmographic depression; in other words, the diastolic relaxation of the ventricle was incomplete, and, therefore, the ventricle was not completely filled, and the systolic wave proportionately low. It was singular to find that, almost immediately after the application was discontinued, the previous regularity of the heart's action was re-established. When a very powerful current was used, the patient perceived an aching sensation behind the lower portion of the sternum, but no actual pain, and occasionally a similar feeling in the left arm was experienced.

When the current was made to traverse the heart continuatively—that is, without interruption or reversal of direction—the frequency of the beats was doubled or trebled, but resumed its normal average on opening the circuit. These effects, however, were only caused if the electrodes were placed on the left ventricle about two centimetres downwards from the auriculo-ventricu-

lar sulcus, behind the vertical branch of the coronary artery, and on the right ventricle, immediately in front of and on the phrenic nerve. The area beyond the two centimetres, and on the right ventricle, that further in front, was found to be quite unexcitable. Von Ziemmsen thinks that the excitable area corresponds to the ganglia of the heart, and found that their excitability could, by repeated experiments of this kind, be so increased that a current of six or eight times less strength than the initial one was then sufficient to cause the same effect. Whether a weak or a strong current was used did not seem to make any difference in the strength of the heart's contractions, provided it were sufficient to act at all.

The heart's action may be retarded below its normal frequency by using a powerful current at somewhat long intervals; but the sphygmographic curve thus obtained is not as regular as when the frequency is artificially increased. It is, however, possible to reduce the pulsations from eighty or more to sixty or fifty in the minute. All the effects of the current may also be obtained by sending it through the uninjured chest-walls, one pole being placed to the sternum and the other to the dorsal spine; and it, therefore, appears not unlikely to become therapeutically applicable where the heart's action is weakened or otherwise disturbed.

2. Dr. Eulenburg refers to the recent confirmation by de Watteville of his figures in regard to the latent transmission of the knee reflex. He found it to be usually not more than $\frac{2}{62}$ of a second $=0.03226$.

Pursuing his investigations, he ascertained the latent transmission of tendo-Achilles-reflex to be $\frac{3}{63}$ of a second.

PATHO-ANATOMICAL CONTRIBUTIONS.

1. Dr. **Pitres.** Note upon the alterations of the Spinal Cord found in a case of Talipes Equino-Varus Arch. de Neurol. Mai-Juin, 1882.—**2.** Adolph. **Strümpell.** Case of Brain Tumor with Central One-sided Deafness. Neurol. Centrllbltt., 15 August, 1882.—**3. Lemoine** and **Lannois.** Acute Spinal Peri-Meningitis. Revue de Méd., 10 Juin, 1882; p. 533.

1. This is an important observation. The patient was 73 years old, and was said to have been born with a talipes equino-varus. She died of broncho-pneumonia. All the muscles of the left lower limb were more attenuated than those of the opposite side.

The sensibility was perfectly preserved. *Post-mortem*, the left anterior cornu was found devoid of cells, coloring vividly red with carmine, densely fibroid in tissue, traversed by large thick-walled vessels, the anterior nerve-roots greatly atrophied, and containing many granular bodies. This accords with similar observations of Michaud (Arch. de Physiol. 1874, p. 586), and Déjérine (same journal, 1875, p. 253), differing from them, however, in being congenital. On the other hand, MM. Coyne and Troisier (Arch. de Physiol., 1871–1872, p. 655), and Thorlens (Thése de doctorat, Paris, 1873) have reported cases in which no lesions were found in the spinal cord in this muscular affection.

2. This is an interesting case, and would be of very great value, were it not that the symptoms are so manifold that it is impossible to tell precisely what diseased area produced any one of them. It is the case of a female, *æt.* 33, who, while under observation at Prof. Wagner's clinic, suddenly became deaf in the left ear, and could no longer appreciate the direction of any sound. She had previously become paretic in left face, abducens and extremities, presenting the headache with emesis and the "choked disk" of an intra-cranial tumor. *Post-mortem*, a tumor, about the size of a medium-sized apple, was found occupying the middle portion of the posterior central convolution and the adjacent parietal convolutions. Around the tumor was white softening, which extended nearly forwards to the fissure of Rolando, posteriorly into the hinder portion of the parietal lobe, downwards into the region of the central ganglia. The tumor was gliomatous.

3. This contains two clear-cut histories of an affection that has seldom been described. Albers (Journ. f. Chir. ü. Augenheilk, 1833), Baudelocque (Constant, Revue de la Clinique de Baudelocque, (Gaz. Méd. de Paris, p. 74, 1835), Simon (Med. Times and Gaz., 1855, f. I., p. 19), Bergameschi, Lallemand, Ollivier d'Angers, Traube (Gesamm, Beiträge, Bd. II., S. 1039), Mannkopf (Berlin, Klin. Woch., 1864, S. 33), and others have treated of peri-pachymenigitis spinalis, but in these the dura mater participated in the inflammatory processes. In the case of Drs. Lemoine and Lannois, however, the areolar tissue surrounding the spinal theca was alone affected. The history is as follows:

Male, aged 22, soldier. On September 4th he was engaged in unloading sacks of biscuits from a wagon, when, the horses starting slightly forward, he fell from the wheel on which he

was seated, rotating to the left so that he fell upon the palm of his hands, the chest striking against the sack which he had been about to throw down. He rose, feeling nothing abnormal, and betook himself to his quarters, where he performed his ordinary duties. The next day he was about all day, but during the evening he felt an indefinable malaise and could not sleep. Monday, the 5th, he made visits, complaining of a pain in his back and a little fatigue; no other symptom, no fever, good slumber. Tuesday, the 6th, he prepared to enter the hospital. Tuesday night and Wednesday morning were badly passed; he experienced difficulty in respiration, but no other symptom. Wednesday, the 7th, he walked the distance of 1 kilometer without difficulty. The day passed tranquilly, but slight chills from time to time. In the evening, he ate as usual and retired about 8 o'clock. At 10 he became aware that he could not move his legs, and complained of dyspnœa. Dry cupping relieved him greatly. Thursday morning, the 8th, the patient was completely paraplegic, no contracture. The paralysis was not confined to the lower extremities; the patient began to speak interruptedly, stopping at every respiration. There was also slight dyspnœa, and he could apparently only respire with the diaphragm, and the play of this muscle was hindered by some slight flatulence. Upper extremities unaffected. He could not move himself in bed, a fact due not alone to the paralysis, but also because the least movement caused intense pain, limited precisely to the region of the first and second dorsal vertebra. This pain was also evoked by pressure, although no deformity or abnormal mobility existed at this point. Sensation completely abolished in all the inferior half of the body, mounting circularly as high as the nipples; also analgesia and thermo-anæsthesia to the same extent. The reflexes had disappeared; no tendon-reflex or foot-clonus. Plantar-reflex gone on the right; on the left, tickling the sole caused a barely perceptible contraction in the thigh muscles. In the inferior extremities and arms fibrillary tremors. There was a subjective feeling of intense heat in all the trunk above the anæsthetic portion, especially in the arm-pits, where there existed insensibility to temperature. The face was congested on the right, as well as the ocular conjunctiva; on this side the pupil was smallest, and there was a slight ptosis and internal strabismus. Complete urinary retention. No emesis. No intellectual defect.

Next day there was emesis. Painful contractions in the thighs.

On the 10th, no reflex after tickling the soles. Phlyctænæ on the two great toes.

11th, A. M., congestion of both ocular conjunctivæ. Ptosis gone. Pupils equal and contracted. Almost complete paresis of both arms. No contracture. Head to the right, cannot be moved, from pain. Dyspnœa much increased.

P. M.—Patient can scarcely talk. Pupils greatly contracted. No albumen, sugar or blood in urine. Biphosphate of soda—1 gramme 92 per liter.

12th.—Face began to cyanose. Intelligence preserved perfectly.

13th.—Death. The temperature, after the 8th, for the first two days ranged between 40° and 41° C., then sank to 39°, sinking rapidly on the next two days until it reached $31\frac{2}{5}°$, then ascending on the day of death to $32\frac{4}{5}°$. Autopsy 24 hours after death. Vertebral column opened from the atlas to the first lumbar; during this operation pus poured through the intervertebral foramen between the first and second dorsal vertebræ. No luxation. No fracture. All the bony parts were perfectly healthy. An abundant purulent effusion was found in the spinal canal outside the meninges, extending from the seventh cervical vertebra to about the eighth dorsal, but especially abundant at the level of the second and third dorsal vertebra. No vascularity or trace of inflammation upon the external surface of the meninges. Incising the dura mater from behind longitudinally, there was found neither pus nor blood, only two small patches of milky appearance upon the pia, at the inferior part of the dorsal cord. The cord softened and almost like thick milk at the level of the three first dorsal vertebræ, this softening continuing and diminishing to the level of the middle of the dorsal, and then ascending to the cervical enlargement. Above and below these points the cord was of normal consistence. The bodies of the vertebræ and the costo-vertebral articulations were entirely normal. The microscopic examination, made after some hours of immersion in Müller's fluid upon the softened portions, and some from the cervical cord, showed débris of nerve-matter, some red blood globules and leucocytes, but no granular bodies. Lungs much congested. No tubercle. Heart, liver, spleen and kidneys normal. It was impossible to examine the encephalon. MM. Lemoine and Lannois, searching the literature, found a similar case that had been published by Prof. Lewitsky (Berlin, Klin. Woch., 1877, S. 227).

These authors deem the diagnosis a difficult one. We cannot

agree with them. The history of a trauma, the supervention of such extensive and grave symptoms in so short a time, the exclusion of fracture, should make the diagnosis a ready one, the more especially as both a meningitis and a myelitis so rapid and widespread would be extremely improbable without fracture. Moreover, the temperature range and the chills, taken in conjunction with the other symptoms, would be significant.

GENERAL NEUROLOGICAL CONTRIBUTIONS.

1. Lecocq. Study of the Apoplectiform Accidents which may complicate the *Début*, the Course and the End of Locomotor Ataxia. Revue de Médecine, 10 Juin, 1882.—**2.** Pierre **Merklen.** Spasm of the Stump after Amputation of the Thigh, Epileptiform Attacks Supervening 4 years after Amputation. Arch. de Physiol., 1 April, 1882.—**3.** Edward H. **Bradford,** M. D. Three Cases of a Painful Affection of the Wrist. N. Y. Med. Journ., July, 1882.—**4.** Wm. J. **Morton,** M. D. Aborted Epilepsy. Journ. Nervous and Mental Dis., April, 1882, p. 363.—**5.** Dr. Adolph **Strümpell.** The Pathology and Pathological Anatomy of Cerebro-Spinal Meningitis. Deutsch Arch. f. klin., Medicin, Bd. XXX, S. 500—**6.** Dr. Alfred **Kast.** A Contribution to the Study of the "Faradaic Reaction of Degeneration." Neurol. Centrlblt. 1 Sept., 1882.—**7.** Dr. **Pitres.** Note Upon the Paralysis in Hemiplegics. Arch. de Neurol., Juillet, 1882.—**8.** Lewis D. **Mason,** M. D. Alcoholic Anæsthesia. Reprint from Journ. of Inebriety, October, 1882.—**9.** E. **Brissaud.** Upon the Localization of Aphasia Associated with Hemi-Anæsthesia or Hemi-Chorea. Progres Méd., 7 Octobre, 1882.

1. Here and there, from the time of Cruvelhier, a case has cropped up of apoplectiform attacks in locomotor ataxia. Cruvelhier, Duchenne, Bourdon, Duguet, Oulmont, Friedreich, Charcot, Topinard, have written about them. M. Lecocq's paper is a resumé of these cases, with the addition of a number of his own, and it leads him to these conclusions :

1. Like general paresis and disseminated sclerosis, locomotor ataxia may offer, in addition to its symptoms proper, apoplectiform attacks.

2. These attacks may be isolated or associated with the laryngeal crises or the epileptiform attacks.

3. They may occur at the *début*, during the course, or at the end of the malady.

4. They exist without ataxia, and cannot be attributed either to the tabes, or to an inter-current affection.

5. They consist of vertigo, slight or great dizziness, which may cause the patient to fall and lose consciousness; of various paralyses, oftener temporary than permanent; sometimes of a fatal comatose attack.

6. When they are of prolonged duration (except the cases of laryngeal crises), when they are accompanied or followed by hemiplegia or permanent aphasia, they can be attributed to a complication or a cause rather than to the malady itself.

2. This is simply the history of a patient, who, given to alcoholic excesses, had his thigh amputated for disease, and the stump became extremely irritable in course of time, because of retraction of the tissues and resulting ulcerations. Touching the stump would produce violent epileptoid tremors of the limb, and four years afterward epileptiform attacks supervened. No neurotic heredity was known to exist in this patient. The case is, therefore, in view of the recent discussions about reflex disorders, of much interest.

3. Dr. Bradford relates three cases in which the following symptoms were present:

1. Pain referred to or most severe at the middle of the carpus.
2. Slight swelling.
3. An absence of constitutional disturbance, and with no interference, or but partial interference, with motion of the articulation between the carpus and the radius and ulna.

The symptoms were in all relieved by fixation, and recovery took place finally after a period of rest.

Dr. Bradford thinks that these cases were similar to an affection described by Gosselin, in 1860, and which he termed tarsalgia adolescentium.

4. This is a remarkable case, which is described by the editor of our distinguished contemporary, the *Journal of Mental and Nervous Disease*, and we therefore give the full and literal report of it:

"V. M———, 46. Has for a year had occasional attacks of vertigo and mental confusion. Staggers along street like a drunken man, does not fall or lose consciousness. Of late has had the attacks almost daily. Exertion brings them on. Recently had a 'fit' while lying in bed. Lost consciousness and had convul-

sions. During the attacks of vertigo, says that his face reddens. Patient very rapidly improved under bromide of sodium."

The singular feature of the case was that the patient's face should redden during the vertigo. In view of this conclusive fact we can understand why Dr. Morton made no opthalmoscopic examination or any effort to ascertain the presence of intra-cranial disease, myelitis, any other nervous affections, stomachic disorder, lithæmia, nephritis, etc.

5. Dr. Strümpell distinguishes an abortive form of epidemic cerebro-spinal meningitis, which, attended with high fever and grave initial symptoms, ends in recovery. Usually in epidemic cerebro-spinal meningitis there is no correspondence between the fever and the other symptoms. Cases can end fatally, almost without fever throughout their course.

The autopsies showed that the inflammatory process was never limited to the meninges, but could be followed deep into the brain-substance. Numerous small pus collections, masses of round cells around the vessels, small hemorrhages into the central ganglia. These were all found, and were often of more consequence than the meningitis itself. In one case, small masses of hypertrophied axis-cylinders were found in the spinal cord, as in tubercular meningitis. The author thinks it probable that large cerebral abscesses can follow epidemic meningitis.

6. In this paper Dr. Kast advances the claim—and he is probably right—that the form of degeneration-reaction described by Erb as the "middle form," has considerable prognostic value. When, in other words, indirect faradisation of a muscle through the nerve produces no contraction, whilst direct faradisation of the muscle itself causes a slow, indolent movement, the prognosis is much more favorable than when the degeneration is complete ; indeed, the author claims that all the observed cases have made good recoveries. But he advances no proof of his assertions, which are too sweeping to be taken on credit.

7. In a recent communication to the Société de biologie, January 21st, 1882, Brown-Sequard called attention to the distribution of the paralysis, so to speak, in cases of recent hemiplegia. He states that an unilateral cerebral lesion does not produce invariably a paralysis of the extremities of the opposite side. In general, besides the typical crossed paralysis there was present paresis of the extremities on the same side. Sometimes, also, the paralysis affected the two lower extremities and the upper

extremity of the opposite side. Dr. Pitres criticises Brown-Sequard in not having appreciated the difference between muscular enfeeblement and true paralysis. A fine distinction, which is apparently not sustained by his own observations.

Dr. Pitres made his observations in the following way: The strength of the upper extremities was estimated by the dynamometer grasped in the hand. In trials of the lower extremities the dynamometer was placed in the flexure of the knee. In the healthy adult man the average figures were as follows:

	MALE.	FEMALE.
Right upper extremity, kilometers.....	49.2	29.4
Left " " "	44.6	26.4
Right lower " "	32.5	19.4
Left " " "	33.2	20.0

The above is the result obtained in 20 men and 20 women. It appears from this that the right upper extremity is stronger than the left, whilst the left lower extremity is a little stronger than the right.

His conclusion in regard to the hemiplegics is as follows:

1. In hemiplegia of cerebral origin the extremities of the side opposite to the hemiplegia are always weaker than in health.

2. In right hemiplegia the extremities of the left side are proportionately less weak than are the extremities of the right side in left hemiplegia.

3. As a rule, on the side opposite to the hemiplegia, the loss of power is proportionately greater in the inferior extremity than in the corresponding upper extremity.

4. The enfeeblement of the side opposite to the hemiplegia is as much more marked as the hemiplegia is more recent.

5. The muscular enfeeblement of the side opposite to the hemiplegia is not accompanied in general by appreciable troubles of voluntary mobility. The extremities have less power, that is all. They execute all of the voluntary movements with precision.

Further observations are to be made by Dr. Pitres in regard to the power in the extremities on the side corresponding to the hemiplegia.

8. Dr. Mason finds on further research that Anstie fully recognized and determined by his experiments on *animals*, that in the production of alcoholic narcosis, anæsthesia of the surface of the body was developed—the conjunctiva being also "perfectly insensitive," and that this condition was compatible

with "partial consciousness." In Anstie's experiments the alcohol was given in lethal doses, total loss of consciousness, with complete paralysis, being *eventually* produced, and finally death supervening. In the *Boston Medical and Surgical Journal*, June 18, 1845, in an article entitled, "Dr. Ellsworth on the *modus operandi* of Medicine," may be found the following paragraph: "Illustrative of the effect of *spirit* in preventing pain, is the following case: Having occasion to remove nearly all of the upper lip for a cancerous disease from an intemperate man, I found him well prepared for the occasion, having fortified himself with an *extra glass or two.* No marble could have been more passive during the incisions; not a muscle moved, nor did a sigh escape him, yet he *was not intoxicated*, but his nervous system was too much excited to feel as keenly as when in perfect sobriety. He only wondered, as it hurt so little, he had never had it done before."

The principal object in Dr. Mason's paper was to show that "alcoholic anæsthesia" could be produced without necessitating a profound and thus a dangerous degree of "alcoholic narcosis," and that persons finding this out experimentally resorted to it as a relief for painful diseases, and thus eventually became inebriates. He has also endeavored to point out that in chronic alcoholism we may meet with "alcoholic anæsthesia" as a pathological condition, and has endeavored to differentiate between the acute or temporary condition and the more chronic form.

9. Brissaud has made no *post-mortem* examination in any case of aphasia with hemi-anæsthesia, but has in a case of aphasia with hemi-chorea. He explains the symptoms as follows, and for the appreciation of the pathological changes he insists on horizontal sections of the brain being made. The fasciculus, as he claims to have demonstrated (*Recherches anatomo-pathologiques et physiologiques sur la contracture permanente des hemiplégiques, Paris*, 1880), from the posterior part of the third frontal convolution traverses the internal capsule at the point of junction of the anterior and posterior segments, which is known as the knee of the internal capsule, and is opposite or corresponds to the inner angle of the triangular-shaped lenticular nucleus. This fasciculus is separated from the sensory fasciculus of the internal capsule by the pyramidal tract, which occupies the anterior two-thirds of the posterior segment. It is not uncommon to find in old persons small linear-shaped hemorrhages in the lenticular nucleus incurvated so that the concavity looks toward the internal capsule. The hemorr-

hagic foci are often confined to the lenticular nucleus, but they may extend beyond its limits. This arciform disposition of the hemorrhage Brissaud thinks is due and corresponds to the arrangement of the white lamellæ of the nucleus, and that the course of the hemorrhage, so to speak, is directed by them, just as the external capsule in extra-lenticular hemorrhage seems to determine the direction. The two extremities of the arc which traverse the lenticular nucleus can then involve two points of the internal capsule at quite a distance from one another, without involving the intercolated portion. In this way aphasia with hemi-anæsthesia can be explained.

Aphasia with hemi-chorea admits of a similar explanation. The lesion traverses the lenticular nucleus in the same way, involving the fasciculus from the posterior portion of the third frontal convolution, but posteriorly affects the internal capsule at a point at the junction of the pyramidal tract with the sensory. This he has verified by *post-mortem* examination.

THERAPEUTICAL CONTRIBUTIONS.

1. J. Mortimer **Granville,** M. D. Note on the Treatment of Locomotor Ataxy by Precise Nerve-Vibration. Brit. Med. Journ., September 23, 1882.—**2.** J. A. **Gasquet.** Use of Atropine as a Sedative. Journ. of Mental Science, April, 1882.—**3.** O. **Kretz.** Upon Hyoscyamine, Abstract in Neurol. Centrllblt, 15 Juli, 1882.—**4.** Simeon **Snell,** M. D. Eserine in Ocular Neuralgia. Brit. Med. Journ., June 3, 1882.—**5.** Wm. J. **Morton,** M. D. Mechanical Vibration for the Relief of Pain. A New *Percuteur.* Journ. of Nerv. and Mental Dis., July, 1882, p. 537.

1. This is a most remarkable paper, in view of the bold and sweeping assertions that are made in regard to matters which ordinary men speak about with reserve. A few citations will illustrate :

The writer finds increased excitability in every case, when percussion is applied to the periphery, and instances that percussion to the anterior tibial nerve causes the foot to be drawn up forcibly. The author has seemingly not known that others have described this symptom and analogous ones under the title of "paradoxical contraction." It will be a surprise to neurologists to learn that it occurs in every case. He then goes on to say that he believes this reflex excitability to be the hindrance to walking

of ataxics. He forgets that it exists in far greater degree in cases of spasmodic spinal paralysis, and yet their gait in no wise resembles the incoordination of ataxics. He furthermore informs us: "I have collected almost, though perhaps not quite (*sic*) enough evidence to show that the syphilitic form of locomotor ataxy, or that which undoubtedly follows syphilitic disease, is not a localized but a local affection. It is a specific inflammatory extension from the penis along the sheaths of the nerves to the proximate centre, and thence by particular fibres to other parts of the cord." * * * "The sclerosis which occurs in the cord in syphilitic disease I believe to be simply inflammatory thickening of a specific character." * * * "The malady consists in a direct extension of the local disease along the sheaths of particular nerve-tracts," *et id omne genus ad infinitum.*

By the same irresponsible train of reasoning, without the advance of one iota of proof, he maintains that locomotor ataxia can probably be cured by percussions or nerve-vibration. This is the very transcendentalism of science, the "utterly utter" and the "too too" of neurology. It is thin as air, intangible, eluding verification as readily as it does comprehension, and consists of opinions based on no facts, and formulated on the *lucus a non-lucendo* principle. We involuntarily borrow the style of the author in criticising it.

2. In two cases, one of chronic mania with lively destructive tendencies, the other of chronic monomania with hallucinations of hearing, the writer substituted atropine for hyoscyamine. The excitement was not so well restrained, the effect of the drug passed away more quickly, but the patients seemed better, not so stupid and depressed as with the hyoscyamine.

3. After confirming the general opinion of the value of hyoscyamine as a sedative in various forms of insanity, the writer thinks it is contra-indicated in cases of strong hallucination, especially of sight.

4. Dr. Snell gives two cases in which severe ocular neuralgia was quickly and effectually relieved by eserine, and he, therefore, recommends it strongly.

5. This is a paper that was read before the American Neurological Association by Dr. Morton, the editor of our distinguished contemporary, *The Journal of Nervous and Mental Disease.* After touching upon M. Brown-Sequard's experiment to prove that general anæsthesia could be produced in animals by counter-

irritants applied to a peripheral nerve, the writer goes on to say: "It requires little imagination to figure the time when a certain localized and known peripheral area of the human skin may be counter-irritated in order to produce an inhibition of pain in some spot far distant * * * Undoubtedly many of the cures or reliefs that are effected by general peripheral treatment, like slapping, rubbing, stroking with the hand, general applications of electricity, etc., are due to impressions produced upon the fine peripheral net-work of the sensitive nerves, and conveyed to centres which set up inhibitory or relief responses, in their turn curative."

This ingenious doctrine of cutaneous localizations, on which is based the further theory of peripheral vibrations, has unquestionably many facts in its favor. In the May number of this journal, one of our editorial items called attention to the fact that Drs. Rubio and Rodriguez, of Madrid, were applying a similar theory to mucous membrane, and were inhibiting the suicidal centre of the cortex by cutting off the uvula. No doubt the suicidal centre could have been quite as efficiently restrained by percussion of the uvula. But the doctrine of cutaneous localizations and cutaneous centres of inhibition has long been unconsciously familiar to the laity, although Dr. Morton is certainly the first person who has formulated it so distinctly. Homicidal centres have long been inhibited by our police force through the application of percussion to the scalp, although the precise area has not been scientifically delineated; and there is a rooted belief that the burglarious centre can be inhibited by a Colt's *percuteur*, with a detachable ounce of lead as a hammer. Indeed, percussion is a familiar domestic remedy for the production of inhibition, especially in childhood; at this latter age, however, the observations have been more precise, and it has been ascertained that the cutaneous surface of the nates has a direct connection with the cortex, a clinical fact which often passes unnoticed in the adult, and on which, even when noticed, a proper therapeutic procedure is seldom based.

Dr. Morton's instrument has, it is said, "a mechanism which would have a more powerful stroke than Granville's clock-work *percuteur* and the dental hammer, and at the same time gives less trouble than the tuning-fork *percuteur*, which requires the use of a small galvanic battery. His instrument involves the idea of applying the vibrating rod directly to revolving hammers actuated

by a crank movement. The instrument was small, light, and could be easily applied to any part of the body."

We have no doubt but that the use of this instrument will be very extensive. As Dr. Morton says : " Nerve-force, whatever its nature is, is probably vibratile. And herein, theoretically, probably lies the explanation of the effects we have alluded to. A vibration different to the vibration existing in the nerve, whether healthy or diseased, is set up by the external agency employed." Add to this Dr. Mortimer Granville's explanation that boring and grinding pains are caused by slow vibrations of neurility, and sharp pains by rapid vibrations,—and we see how scientific, practical and simple this new neurological therapeusis is. We have only to proceed upon the principle of *dissimilia dissimilibus*. If the pains be boring or grinding, we must apply rapid vibrations by means of some instrument, such as Dr. Morton's, actuated by a crank movement, especially if the pain be associated with any mental aberration. If the pains be sharp, the percussion must be slow ; and the sharper the pain the slower should be the percussion, until, with violent pain, more than a stroke a month might be extremely dangerous. It has been, perhaps, some such instinct as this that has led to the frequent employment of the " Dead March in Saul " upon funereal occasions. But the subject is an abstruse one, and we must wait for further evolution of it, of which we hope to keep our readers informed from time to time.

PSYCHIATRICAL CONTRIBUTIONS.

1. B. **Ball.** De l'insanité dans la paralysie agitante. L'Encéphale, 1882.—**2.** H. M. **Bannister** and H. N. **Moyer.** On Restraint and Seclusion in American Institutions for the Insane. Journal of Mental and Nervous Diseases, July, 1882.—**3.** E. **Billod.** Des Maladies Mentales. tomes 2. G. Masson, 1882.—**4.** T. S, **Clouston.** Alternation, Periodicity and Relapse in Mental Diseases. Eding. Med. Jour., July, 1882.—**5.** Max **Flesch.** Untersuchungen über Verbrecher-Gehirne. 1 Theil. Stuber, 1882, (2 plates, p 103.)—**6.** Wm. A. **Hammond.** Eccentricity and Idiosyncrasy. N. Y. Med. Jour., Oct., 1882.—**7.** **Koster.** Ueber die Gesetze des Periodischen Irreseins und verwandter Nervenzustände, Bonn. Strauss, 1882 (p.193). **8.**—K. **Lechner.** Zur Frage der Lokalisation der Ernährungsstörungen des Gehirns bei Verrückten. Lecture held before the Medical Society of Pest, March

11, 1882.—**9.** W. Bevan **Lewis.** The Human Brain, Histological and Coarse Methods of Research ; A Manual for Students and Asylum Medical Officers. London. J. & A. Churchill, 1882.—**10.** Charles **Mercier.** The Data of Alienism (nothing new). Jour. of Mental Science, October, 1882.—**11.** Wm. Julius **Mickle.** The Knee-Jerk in General Paralysis. Journal of Mental Science, October, 1882.—**12. Raymond.** Sur certaines délires (simulant la folie) survenus dans le cours des néprites chroniques et paraissant se rattacher à l'anémie. Arch. générales de Médicine. Mars, 1882. —**13. Sepilli.** Il sargue dei pazzi pellagrosi. Archivo, Ital., 1882. V. p. 109.—**14.** D. H. **Tuke.** History of the Insane in the British Isles. Kegan, Paul, Trench & Co., 1882 (with four illustrations, p. 548).

2. A calm scientific discussion of the vexed question of restraint, fortified by incontrovertible facts drawn from official statistics, and here and there a little dry justifiable sarcasm as: "American hospital reports are equally silent as regards statistics of destruction of property. The only way in which it can figure in them is in the *per capita* cost, and here, owing to methods of keeping accounts, etc., it is not likely to make much of an appearance;" or : "In another institution visited by one of the writers, the attendants were permitted to apply restraint, and record the form and number of hours in a book kept in the ward for the purpose, which was shown to the physician on his morning round. This has some resemblance to the practice of hanging a criminal, and afterward giving him a trial."

3. These two volumes consist of reprints of a number of interesting psychiatrical and medico-legal papers, published during twenty years, in the Annales medico-psychologiques and other journals.

4. States that one-half of forty cases of cyelothymia observed by himself had monthly, one-third seasonal and the rest irregular periods. Dr. Clouston finds periodicity to be particularly frequent with the hereditarily-disposed subjects. He recommends cannabis indica and bromides in the treatment of circular insanity with the intention of cutting short the maniacal periods ; the latter is an old recommendation and a sound one.

5. Every criticism made in our review department of the last production of Schwekendiek, Dr. Flesch's pupil, applies with double force to the monograph before us. It serves to characterize the whole matter now promulgated by the Wurzburg propa-

ganda that a skull with a depressed fracture over the middle of the temporal fossa, and a brain with intense degenerative changes, ensuing after the injury, are pictured and described as a criminal skull and brain. This from a logical point of view out-Benedict's Benedict!

7. The conclusions of this author—which will be accepted when the numerous sources of error complicating similar researches can be eliminated by some subsequent investigator and not before—are as follows:

I. Periodicity is an element of all forms of insanity.

II. The development of periodicity is gradual. The germs of the same are found with ordinary simple psychoses as remission and exacerbation; there are hourly, diurnal and often in the same case weekly and monthly oscillations. The acute ordinary psychosis passes through oscillations, following certain laws, to recovery; the oscillations manifesting themselves as remissions and exacerbations. Chronic insanity also is marked by remissions and exacerbations. Intermissions are more commonly found in melancholia and mania, remissions in the other forms. There is, therefore, no essential difference between ordinary and periodical insanity—only where the periodicity is accentuated has the designation "periodical insanity" been hitherto employed.

III. There are forms of insanity with free intervals lasting for years, whose attacks are commonly considered as recurrent, which might be designated as periodical attacks of the same disease, either of mania or melancholia, or of both in alternation.

IV. Epilepsy in its individual attacks, as well as in its variations in the different forms of epileptic insanity, follows the same laws of periodicity as ordinary insanity.

V. The death of the insane not uncommonly conforms to the periodicity of the case.

VI. The periodicity of insanity and the related neuroses follows a definite law. The periods follow spaces of time, which either themselves or in their combination are divisible by seven; the periods, as a rule, develop unevenly, so that a wave-like increase and decrease of the periods are noticeable, each wave consisting of a variable number of periods. The periods of exacerbation and remission show, as a rule, a certain parallelism in their course. The waves represent segments, whose duration may be also expressed in figures, following the rule that they are divisible by seven. In many though not in all chronic cases, several of these

waves in their aggregate constitute definite larger cycles, showing the same law of duration.

VII. The numbers divisible by seven are (to be) called anomalistic, because they are measurable by the so-called anomalistic course of the moon around the earth, in which the moon at one time is nearest the earth (Perigee); and at another most distant from it (Apogee), and which has an average duration of 28 or 4 x 7 days.

VIII. The deviations of the summarized results in the tables (of the exacerbations of the insane) from the (average) anomalistic figure, which deviation is at most one or two days or less, must be explained by the irregular and, therefore, so-called anomalous course of the moon, which in the interval between the Perigee and Apogee may differ by four days. The so-called anomalistic figure is hence an average only.

IX. That the course of the moon is probably the determining factor is not only shown by a consideration of the fact stated under 6, but also by the fact that the beginnings and termini of the periods are either in the neighborhood of the Apogee or Perigee, or at least on such definite days when the moon is in a given position as to nearness to the earth, either before or after the extreme positions.

X. A direct or indirect influence of the position of the sun on the insane in the periodicity of insanity is not noticeable.

XI. Other observations render it probable that the variations of earth-magnetism have an influence on the excitement of lunatics and epileptics. Now, since an influence of the moon in terrestrial magnetism is scientifically established, the influence of the hypothetical action of the moon on the human organism may be supposed to be mediated through the terrestrial magnetism as an intermediate factor.

XII. Other influences, psychical excitement, change of location, inter-current bodily diseases, fever, suppurations, wounds, telluric influences and medicines modify the regular course of periodical insanity and neuroses more or less, but these modifications are all under the control of the main law.

It strikes us that many of Dr. Koster's observations are forcibly crammed into the procrustean bed of his preconceived notions. In our experience the barometric variation exerts a much more decided influence on the ordinary insanities and epilepsy than the position of the moon; and if Dr. Kos-

ter is correct in assuming a relation of the outbreak of periodical insanity to the position of the moon, he has furnished us with a reason, himself, for declining to accept his conclusion that there is "no essential difference" between periodical and ordinary insanity. On the other hand it is difficult to see how a circular periodical psychosis, whose maniacal phase was yesterday, whose melancholic is to-day and whose paralucid interval will be to-morrow, follows periods "divisible by seven." That the lunar periods influence the human organism is unquestionable, but the matter should not be carried to extremes, and the influence of the seasons, for example, which is unquestionable in insanity, altogether ignored. The monograph, as a whole, is a painstaking and suggestive one.

9. That a book of one hundred and sixty-three pages, intended to instruct medical officers of asylums in the methods of examining the insane brain (and otherwise of indisputable excellence), should be issued in the year of our Lord 1882, without containing a single reference to, or caution against artefacts, may seem incredible, but this has been accomplished by Dr. Lewis. He has also, in enumerating various microtomes, mentioned almost every worthless instrument devised by his compatriots, and ignored absolutely the instrument of Gudden. To make up for the deficiency, he describes what is essentially Gudden's instrument as a "Microtome for slicing through whole hemispheres of human brain. The instrument which *I* have had made for this purpose at the West Riding Asylum." He thus leaves it to be inferred that he has devised the apparatus, and the unwary may credit him with Gudden's invention. Comment is simply superfluous!

11. This is a valuable and reliable contribution by the leading British authority on paretic dementia. Dr. Mickle finds that absence and diminution of, and normal knee-jerk are much more common in paretic dementia than exaggeration of this reflex. Dr. Mickle is unnecessarily concerned about the difference of his results from those obtained by Dr. J. C. Shaw, who found exaggeration of the reflex most common. We believe that if Dr. Mickle had analyzed the diagnostic acumen manifested by some of our hot-house-grown alienists, and if he had duly weighed the logical value of an attempt to associate speech disturbances with the tendon-reflex emanating from the same quarter, he would submit his valuable observations, with which those of Westphal

and our own coincide, without any reference to the unreliable observations made on monomaniacs and simple and alcoholic maniacs, diagnosticated as paretic dements on the strength of a lingual tremor.

14. This interesting volume gives an instructive and entertaining account of the treatment of the insane in Great Britain from the earliest periods. As might be expected, the author has been compelled to dig extensively into the Tuke family archives; for the first rise and the early progress of the humane treatment of the insane in England were exclusively the result of the efforts of his ancestor, William Tuke, and in part of the grandson of the latter, Samuel. Not the least fascinating portion of the volume is the one dealing with the proverbial Bedlam; the contrast between the Bedlam of old and the present Bethlem Royal Asylum is aptly typified in the two illustrations representing a scene from the wards as they were of old and as they now are. In describing Bedlam, its first foundation and subsequent changes, Dr. Tuke shows no little archæological lore, and we believe that his volume will prove not only a turning-point in the literature of psychiatrical history, but also no mean contribution to the topography and history of a part of ancient London. Many who are interested in the work of William Tuke will be pleased to find a picture of the historical "Retreat" in the frontispiece. The work of Dr. Tuke also embodies the most thorough account of British legislation in regard to the insane we are acquainted with, and cannot fail to prove of great interest to the legal as well as the medical student for this reason, as it commends itself also to the intelligent general reader, from its historical, humanitarian and literary bearing. Portions of the work embody and are elaborated from the presidential address of Dr. Tuke, delivered before the Medico-Psychological Association, which has been editorially noticed in this journal.

THE SOMATIC ETIOLOGY

OF

INSANITY,

BEING THE

W. and S. Tuke Prize Essay,

BY

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PREFACE.

AT the annual meeting of the British Medico-Psychological Association, held in London, August, 1874, Dr. D. HACK TUKE, on behalf of the descendants of the founder of the York Retreat, offered the Association one hundred guineas "from their filial and grand-filial love to his memory and that of his grandson, and with the still greater object of advancing the cause they had at heart," with the intention that the sum should be given as a "prize for the best essay on some subject connected with insanity."

The following lines from CONOLLY'S book on "The Treatment of the Insane without Mechanical Restraint" may find a place here as a memorial of the men who were thus honored by their descendants.

"About the time when Pinel's great work of reformation was effected in France, and many patients were liberated, after being chained for many years, a similar work was providentially commenced in a provincial city in England. . . . The result was the foundation of the Retreat at York. Of this admirable asylum, the first in Europe in which every enlightened principle of treatment was carried into effect, the chief promoter was the late William Tuke, of York. His worthy grandson, Samuel Tuke, who is still living (1856), has continued up to a very advanced period of life to be a frequent visitor and most active governor of that admirable establishment; and for readers desirous to know the views which ought to prevail in all lunatic asylums, I could not even now refer to any work in which they are more perspicuously explained than in Samuel Tuke's account of the Retreat at York, published in 1813. In the valuable works of Pinel,

and his honored successor Esquirol, we find graphic descriptions of all varieties of mental disorders and lucid views of treatment; but in none are the details of management, economic, medical, and moral, of an institution for the insane to be found more convincingly set forth than in the work of Samuel Tuke. The substitution of sympathy for gross unkindness, severity, and stripes; the diversion of the mind from its excitements and griefs by various occupations, and a wise confidence in the patients when they promised to control themselves, led to the prevalence of order and neatness, and nearly banished furious mania from this wisely-devised place of recovery. All of those who have followed in the path of William and Samuel Tuke, at however great a distance, must ever gratefully acknowledge the extent of our debt to them. It is true that neither they nor Pinel ventured wholly to abolish mechanical coercion; this was left for Charlesworth to attempt, and for Gardiner Hill to carry out, at Lincoln, and for Hanwell to confirm on the largest scale; but when the emulation produced by the changes made in asylums during the last twenty years has subsided, every historian of these establishments must point to Pinel and to Tuke as the men who led the way for the more complete system of non-restraint."

The offer of the descendants of W. and S. Tuke having been accepted, the following committee were appointed to carry it out and award the prize: Drs. BUCKNILL, MAUDSLEY, MITCHELL, HACK TUKE, and the President, Dr. ROGERS, with Dr. RHYS WILIAMS as Secretary. The prize was awarded to the author of the present essay in August, 1878.

The completion of certain researches which had been left unfinished at the time the essay was submitted, rendered it desirable for the author to rewrite and rearrange its greater portion before publication. In this undertaking he has been so much delayed that it is only by a reference to the number of his other investigations carried on in the mean time, that he can venture to support an apology for the late appearance of the essay. It is also proper to say that, as the original essay has been considerably modified, the author assumes the sole responsibility for its

conclusions, as now published, although the donors of the prize most willingly consented to the utilization by the author of such observations as he has registered, and as have been laid down by others since the award of the prize.

The clinical and pathological material on which the researches herein embodied were made, was, to a great extent, obtained from the New York City Asylum for the Insane (of which asylum the author was for some years the acting pathologist), through the courtesy of Dr. J. G. KIERNAN, assistant physician of that institution. This gentleman also sacrificed much time and labor in making inquiries into the earlier histories of patients, and supplying other information, not to be obtained from the records, particularly in the way of cranial measurements and thermometrical, as well as other clinical observations undertaken at the author's request, and, in part, under his direction. It is hence but just, that aid, so essential and so unselfishly rendered, should be gratefully acknowledged.

Full histories of observed cases have been given only where the individual case itself illustrates some general proposition, and where it was deemed necessary to exclude a possible source of error, in the establishment of a relation between lesions and symptoms. In other cases, details not relating to the mental history of the patient have been omitted, and, in still others, notably in cases of paretic dementia, no attempt has been made to furnish records, in themselves barren and unprofitable, but, instead, the various individual observations have been amalgamated, the links of evidence wanting in one group of cases supplied from another, and the aggregate result presented in a more compact and, it is hoped, more convenient form for the reader.

INTRODUCTION.

THE study of mental pathology became a branch of medical science when the territory within whose confines the causes of insanity exert their influence, was universally admitted to be a material body. With the triumph of the somatic school of alienists over the metaphysical school, and not till then, could mental affections be considered legitimate subjects for medical treatment.

As far as the prevention and cure of insanity lie strictly within the physician's province, these are to be effected through attention to the physical state of the individual, of the family, and in the widest sense of the race. The clearer, then, the somatic foundation of the evil to the mind of the pathologist, and the more perfect the record of the train of interacting causes, the more definite will be those indications of which the therapeutist can avail himself. In this light the question of the somatic etiology of insanity is the fundamental problem of mental science.

A rational inquiry regarding the elements involved in this problem. demands more than the formal registration of causes by name, such as the statistical method might be competent to furnish. The development of a mental affection is only exceptionally the direct sequence of a single cause, or of simple causes, where these are multiple; it is usually the terminus of a series of phenomena, each of which is, as a step, essential to the culmination, and may in itself, therefore, furnish special practical indications.

As the final operation of the somatic disturbances leading to insanity is manifested in the brain, and yet this organ, as Morel has aptly expressed it, while always the seat of insanity, is not always the seat of its cause, it becomes necessary to follow up causes originating elsewhere in the body, through their transformations, up to the moment when, by the direct involvement of the cerebral mechanism, their influence in producing insanity is rendered evident.

Such a procedure requires a continual dovetailing of facts and of theories, a blending of the deductions of empirical psychology with the observations of neuro-physiology and of pathology. Our knowledge of the relation existing between the body and the mind is yet so imperfect that, in constructing a chain of the evidences uniting abnormal somatic states with abnormal mental phases, we find many links missing, whose place, for the present, theories must supply. Although proof of the exact manner in which a disorder of the higher elements of the nervous system determines mental aberration lies outside the pale of demonstration, and our knowledge of the influence exerted on the encephalon, by the peripheral organs, has not yet emancipated itself from the thraldom of experimental uncertainty, it may be safely asserted that the value of a given etiological assignment will bear a direct relation to its plausibility as tested by our existing knowledge of psychological physiology. The chances of error in such an assignment are great, but we can diminish these chances by duly considering the mistaken interpretations of the past, and avoiding the original sources of error that led to them.

It is now generally recognized that the attributing a given mental affection to a co-existing physical anomaly, merely because the two co-exist, can lay no claim to acceptation as a scientific fact.

Many of the somatic phenomena presented by the insane are signs of their disease, that is, they are either evidences of the obscure influence exerted by the mind upon the body, or of the trophic rôle played by the brain in the nutrition of distant organs, or finally local expressions of a deeper general somatic state, on which the insanity and the somatic signs in question rest in common. Amenorrhœa in women, and torpor of the enteric tract in all sexes are concomitant to, and not causative of, melancholia. It is hardly necessary to refer here to the grave visceral lesions found with the paralytic insanities, which are results and not causes of the cerebral lesion, and whose analogues have been produced through artificial cerebral lesions, in the lower animals,[1] nor to similar somatic changes, sometimes found in cases of advanced epileptic insanity.[2] Even palpable affections of the brain may be accidental accompaniments of a mental disorder, nay, even its indirect results! The cysticerci found in the brains of imbeciles, terminal dements and paretics, developed from ova introduced with the materials devoured by these lunatics of filthy propensities, illustrate and support this statement.[3]

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[1] By BROWN-SEQUARD, LEUDET, OLLIVIER, DUPUY, EULENBURG, and others.

[2] DUFOUR, Annales Medico-Psychologiques, 1880.

[3] ULLRICH, Allgemeine Zeitschrift für Psychiatrie, 1872, xxix.

WENDT, Fall von Cysticercus im Gehirn, als Folge, nicht als Ursache der Geistesstörung. Ibidem, 1874, xxxi.

MESCHEDE, Ibidem, 1873, xxx.

I have frequently found cysticerci, single or in numbers not exceeding three, in monkeys of the genera macacus, cercopithecus, cynocephalus, and semnopithecus, occupying different gyri, including those most carefully studied by the localizationists. In none of these cases had any symptoms of cerebral disturbance been observed. It is, however, a beautiful illustration of the proposition that diffuse and multilocular lesions of the fore-brain always produce insanity; that in an earlier case of Wendt's (Allgemeine Zeitschrift für Psychiatrie, xxv.) where beside numerous cysticerci found in the cerebellum and basilar parts, one hundred and thirty were found in the cerebral hemispheres, the insanity of the subject coincided with the probable period of their development, as it does in analogous cases found among domestic animals.

Other instances, and these of micro-parasitic invasion of the nerve centres, are on record in which a similar relation can be traced between the trophic disturbances of a special form of insanity as a cause, and the most prominent morbid appearance of the nerve centers found on death as an after-effect.[1]

From the dearth of constant pathological findings in cases of insanity, the earlier, and some of the cotemporary pathologists have been reduced to remarkable extremities in endeavoring to assign insanity to material causes, or to explain certain of the symptoms of insanity on a material basis. Some of the resulting errors are no doubt due to the fact that those who have fallen into them, have not had as large a material of normal subjects at their disposal as would have enabled them to determine the extent of normal variation. One alienist, for example, claims as a pathological fact, that the sciatic nerve is flattened in general paralysis of the insane; yet this nerve is always a flat cord, and variably so, in normal subjects. Another writer finds certain cells of the parietal region and its neighborhood to be "pathologically enlarged" in special forms of insanity; several years before, Betz had demonstrated that just such cells constitute the nests of gigantic pyramids in that very region of the normal cortex. Their absence, not their presence, would be abnormal!

The value of our psycho-pathological literature is otherwise impaired by the fact that many of the "lesions" recorded by observers have been, not the result of disease, but of imperfect manipulation. SCHUELE,[2] for example,

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[1] At the thirty-eighth meeting of the "Berliner psychiatrischer Verein," DR. C. REINHARD reported a case of a female paretic, in whom numerous microparasites (microsporon septicum) were found in the nerve-centres, together with cerebro-spinal leptomeningitis. These lesions were due to septic invasion by way of the intervertebral openings and the cerebro-spinal fluid from a decubitus.

[2] Sectionsergebnisse.—MENDEL (Die progressive Paralyse der Irren) pronounces the gaps of Schuele to be cracks, resulting in the course of the harden-

describes gaps in the white substance of the cerebral hemispheres of paretics, which, with MENDEL, I can only consider to be artefacts. In earlier publications, I have called attention to the artificial precipitates, chiefly composed of leucin, which, variously interpreted, have been described as the true lesions of certain forms of insanity; they can be produced at will in the brains of healthy subjects, by using the same hardening agent responsible for the registrations alluded to.[1]

Much as is to be eliminated from our pathological records, as accidental or artificial, those records become still further reduced when we attribute a proper value to the registration by alienists of certain vascular and other histological appearances as lesions of insanity, which are found in every healthy adult. The more delicate changes in the adventitia of the cortical blood-vessels, deposits of hæmatozin and granular matter in their neighborhood, and pigmentation of certain nerve-cells, it can be positively affirmed are constant occurrences in subjects dying sane, and who have never been anything but sane.[2] It is also

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ing process, and asserts them to be common in the hardened brains of lower animals. This is correct. I would call attention to another source for similar appearances, viz., the action of frost on the partially hardened brain. When a high degree of cold is reached, the entire organ becomes riddled with cracks and falls apart; with lesser degrees, the natural spaces, such as the pericellular and perivascular gaps, become much exaggerated by the expansion of the fluid within them in the freezing process, without cracks occurring.

[1] Review of the Proceedings of the International Medical Congress. Journal of Nervous and Mental Diseases, January, 1878.—Reform in Scientific Psychiatry, ibidem.—What has been done by the Asylum Association in the Interest of Scientific Psychiatry? Chicago Medical Review, June 20th, 1880.—The Psychological Pathology of Progressive Paresis. Journal of Nervous and Mental Diseases, April, 1877. My conclusions as to the artificial nature of many of the bodies described as "miliary sclerosis," "amyloid" and "colloid" spheres, have been confirmed by SAVAGE, in a paper read before the International Medical Congress of 1881, at London.

[2] OBERSTEINER (Wiener. Medicinische Presse, 1876) reports these appearances as present to a varying extent in the brains of more than sixty subjects dying from different diseases and sane. It would be very difficult, judging by my experience, to find an adult brain not presenting these appearances. In fact, they seem to be almost necessary consequences of the physiological activity

to be borne in mind that many actually morbid appearances in the insane are not necessarily related to the insanity as such. These are prominently the atheromatous change of the blood-vessels and the so-called miliary aneurism. Both occur at least as frequently in the sane population as in the insane, and the clinical signification of both changes is so thoroughly well known and appreciated that their potency to produce those symptoms of mental alienation which occur equally well in insane subjects with healthy blood-vessels, may be safely denied.[1]

In many cases of advanced insanity, particularly with the so-called secondary states and terminal dementias, numerous morbid appearances are found, which, while they bear an unquestionable relation to the mental state of the patient as it was preceding his demise, have no real etiological signification; established years after the inception of the insanity, they must be considered as secondary, and frequently as passive results. The so-called arachnoid cysts, and many instances of a moderate degree of cerebral atrophy, are of this character.

From the statements just made, it follows, that before a preternatural appearance, found in the brain of an indi-

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of the organ. No pathological pigmentation ever exceeds in intensity that of the cells of the Substantia nigra (*Ganglion intermedium* syn. *Soemmeringii*) and of those of the Substantia ferruginea, and rarely exceeds that of the gigantic pyramids of the paracentral lobule. It happens to be a peculiarity of the human species (with the possible inclusion of the anthropoid apes) that the cells of the first two ganglia mentioned become pigmented in adult life. HERBERT MAJOR (Journal of Mental Science) describes intense and widespread yellowish pigmentation in the cortical nerve-elements of a sane man dying suddenly from an accident.

[1] Inferences drawn from the experience of a single observer are open to many objections, but I cannot omit recording that, in a series of nearly forty autopsies in a single asylum, including every clinical form of insanity, and especially many cases of general paralysis of the insane, I have not found a single instance of the miliary aneurismal change, and but a single case of that extreme familiarly-known atheromatous change, which I have frequently had occasion to notice in autopsies made of patients in private practice, and dying either from coarse cerebral disease, or where its presence was accidentally discovered, in case of death from other causes.

vidual dying insane, can be adduced to explain the nature of the mental symptoms, or to illustrate the operation of an originally remote cause, it should be submitted to certain tests. It must not only be demonstrably independent of spontaneous changes occurring after death, and of artefacts produced by the investigator, but it is also essential that the lesion be not one of the same kind, extent, and location as one found as frequently, or more frequently, in subjects dying sane. It is needless to remark that the same requirements are to be met, when it is attempted to establish a relation between diseased conditions found in other organs than the brain, and a co-existing insanity.

The connection between a given lesion and mental alienation having been rendered plausible after compliance with these preliminary demands, it remains to be ascertained whether the lesion as found is merely related to the particular phase of insanity as it existed before death, or whether it explains also the origin of the trouble. It is here to be insisted that, if the mental disorder is the terminal phase of a preceding series of mental symptoms, perhaps differing in character, the discovered lesion can represent nothing more than the somatic basis of the terminal phase; it may enlighten us as to the basis of the preceding mental phases and the inception of the original evil, to that extent only to which the principles of pathology permit us to infer from a post-mortem appearance what the initial steps of the morbid life-processes leading to it were.[1]

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[1] Almost self-evident as this proposition is, its enunciation may not be superfluous, in view of the neglect to which it is treated every day. In neuro-pathology especially, have observers, often from the mere existence of a lesion, endeavored to account for symptoms on that lesion as a basis. For example, BENEDICT and AMIDON have considered certain small cavities found by the former in the cortex, and by the latter in the isthmus of patients dying as advanced cases of hydrophobia and tetanus, to stand in a direct relation to the symptoms of those disorders; the latter observer even goes so far as to venture an explanation of trismus on this ground. Due reflexion and a comparison of cases dying at dif-

It is admitted that, in many instances, the apparent causes of insanity would fail to exert their pernicious influence if the germ of mental disorder were not previously planted in a defective nervous organization. Before then the injuries directly affecting the brain and its protective capsule, and acting through the circulatory apparatus, as well as those determined by subtle peripheral influences, can have their true bearing established, it is necessary to eliminate this constitutional factor. Such a constitutional factor were palpable to our methods of examination if not consisting in, is at least associated with corporeal anomalies. Our subject, therefore, properly opens with a consideration of the somatic basis of the constitutional insanities.

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ferent stages of such affections, would lead to the conclusion that the lesions found were remote results of other pathological states incident to an earlier period of the disease. The remarkable similarity found existing between certain pathological transudations in as different affections as *mania gravis*, tetanus, and hydrophobia, should inculcate caution in this field.

CHAPTER I.

Faults in the Cerebral Architecture as the Basis of a Faulty Mental Mechanism.

The observant visitor, passing through the wards of an asylum for the insane, has his attention directed to the large proportion of the inmates exhibiting anomalies of the cranial configuration. Aside from a number of cases where the skull is either perceptibly above or below the average in all its dimensions, and another series in which the cranial asymmetry is grossly exaggerated, there are found others where, either separately from these aberrations or co-existent, there are discovered extreme brachycephaly or dolichocephaly, flattening of one or the other end of the cranial ovoid, disproportions between the dome and the base, promontory-like extensions of the vault, in short, every conceivable deviation from that standard which the experience of anatomists with sane subjects justifies us in considering as the normal one.[1]

The question naturally arises, whether a relation can be established between these anomalies of the cranium, and the presence of their bearers in an asylum. Most of the classical writers refer to such a relation, and content them-

[1] The cavil that, in many anatomical museums, as aberrant crania are found as in asylums, falls to the ground when it is recollected that the dissecting-room was supplied in the olden time with the bodies of criminals, prisoners, and suicides, and that to this day pauper institutions and infirmaries constitute a main source of its material. A large collection of crania now in New York, probably one of the largest in the United States, and the richest in aberrant crania that I have seen, derives probably all of these from the pauper insane subjects, who constitute from ten to thirty per cent of the material of the dissecting-room connected with it.

selves with noting the coincidence of mental alienation in general, with cranial malformation. FOVILLE the elder, after excluding cases of idiocy and cretinism from the list, found that one-sixth of his insane patients presented marked cranial malformation. In the most accurate series of measurements of insane crania recorded in literature, the majority of the specimens were found aberrant. These measurements, as well as kindred observations, lose much of the value they might otherwise possess, because they pay little or no attention to the clinical form of insanity presented by each subject. MOREL was the first to refer to an intrinsic relation between the character of the insanity and the associated cranial anomalies. He established the special frequency of the latter with the hereditary and degenerative forms. Subsequent writers made even finer distinctions, which seem to support, and are in their turn supported by, the statements of Morel. The same anomaly, a peculiar flattening of the occiput, was found in thirten subjects presenting the symptoms of the *manie raisonnante* of the French.[2] A different malformation, characterized by flattening and depression of the forehead, with an increase of the transverse diameter of the skull, has been noted as being of special frequency with insanity manifesting itself in homicidal, suicidal, and other dangerous impulses.[3] The stenotic skull has been as often observed with congenital weak-mindedness, associated with mental and motor agitation. Among special symptoms, none appear to be so frequently associated with a particular cranial deformity as pyromania. The Germans have found osteophytes on the *sella turcica*, abnormal

[1] THEODOR MEYNERT, Kraniologische Beiträge zur Lehre von der psychopathischen Veranlagung. Jahrbücher für Psychiatrie, 1879, ii. and iii.; 1880, i. The greater portion of these measurements are acknowledged by the author to have been made by ZUCKERKANDL.

[2] CAMPAGNE: Traité de la Manie raisonnante; quoted by Dagonet.

[3] DAGONET: Nouveau Traité élementaire et pratique des Maladies Mentales.

prominency of the *clivus* projection, and distortions of the skull in the living subject, which pointed to a basilar deformity in those exhibiting this impulse.[1] The *crania progenæa* have been found in subjects representing connecting links, as it were, between idiocy and insanity.[2] But pronounced asymmetry of the skull is found to be less constantly associated with special forms of derangement; very frequent with epilepsy and epileptic insanity, it is a not uncommon accompaniment of monomania and imbecility.[3]

The combination of cranial deformities with such different forms of insanity, seems little calculated to explain, *per se*, the character of the connection between the visible anomaly and the mental aberration. That the cranial deformity is merely the expression of an error in development, simultaneously affecting the organ of the mind, and

[1] STAHL (Clivus-Studien, Allgemeine Zeitschrift für Psychiatrie, 1872) look upon these anomalies as compensatory and analogous to the compensating hyperostosis sometimes found with cerebral atrophy. MESCHEDE found osteophytes on the *sella turcica* in an epileptic pyromaniac girl, and agglutination of the pons-membranes to the *clivus* with displacement of the basilar vessels in another pyromaniac (ibidem). The forensic cases of GIROTTO-TIBALDI (Archivio Italiano, 1872) where microbrachycephaly was observed; of STAHL (Irrenfreund, 1871, 11), where idiocy and brachycephaly co-existed; and EMMINGHAUS (Vierteljahrschrift für gerichtliche Medizin, 1874, 1), with premature ossification of the spheno-basilar and spheno-frontal suture, illustrate the importance of the cranial configuration as a physical sign of insanity. In all these cases arson had been committed, and the observed anomalies point to their probable association with basilar deformity, as above stated.

[2] LUDWIG MEYER: Ueber Crania Progenæa, Archiv für Psychiatrie, i. The history of three cases is given, all presenting the same mental cast, as well as the cranial anomaly named. The latter has an historical interest: Meyer refers to the account of the English embassador on the death of Charles II. of the elder line of the house of Hapsburg, which line was, in its latter descendants, imbecile, and exhibited the cranial deformity in question. The embassador wrote, "his nether jaw stands so much out that his two rows of teeth cannot meet."

[3] LASÈGUE (De l'épilepsie par malformation du crâne. Archives générales de Medecine, Juillet, 1877) and GAREL (Lyon médical, 1878, i. and iii.) establish the close relation between idiopathic epilepsy and faulty ossification of the cranial sutures with resulting asymmetry. MOREL (La dégénérescence de l'espèce humain) finds it as frequently in the degenerative forms of insanity. It is quite common in the criminal and insane epileptics.

that herein its signification really consists, is almost self-evident. But before we can pursue this study further and profitably, certain clinical relations must be clearly grasped, whose accentuation at this point may be pardoned.

The defective states of the mind which are the frequent manifestations of an hereditarily transmitted taint, may be ranged in a serial chain, whose links are constituted by different forms of alienation, and merge gradually into one another.

One end of this chain is constituted by idiocy, the other by that systematized perversion of the intellect, which, classed by the great ESQUIROL under the too often misinterpreted designation of monomania, is now known variously as megalomania, chronic delusional insanity, primary intellectual vesania, and by a host of other terms,[1] more or less correctly expressing some prominent feature of this form of mental alienation. On first sight, these two conditions would appear to be separated by an impassable chasm, and this from a psychological, as well as from a strictly somatic point of view. No greater contrast could be exhibited within the walls of an asylum than by placing side by side an idiot and a lunatic with systemized projects and delusions; on the one hand, we have a state characterized by an utter absence of every higher mental co-ordination, on the other, one which manifests intricate and varied combinations of the mental mechanism, which are analogous to those of the normal mind. In the former case, we perceive, usually on the first glance, the

[1] The best designations, to my mind, are "Originäre Verrücktheit" (SANDER) and "La Folie systematisée," I believe first employed by MARCÉ. The designation "Primäre Verrücktheit," now in use in Germany, is destined to lose its force if such altogether unrelated states as the acute hallucinatory delirium and "Verwirrtheit" are classed under it. It is for this form of insanity that I have pleaded the rehabilitation of the almost discarded term of monomania against particularly the strictures of BLANDFORD (St. Louis Clinical Record, December, 1880).

gross anatomical defect, which is in such perfect parallelism with the mental hiatus, evident; in the other, we may fail to detect any deviation from the normal physique with our available methods of examination.

On studying, however, other cases of insanity arising in the course of hereditary transmission, we find certain groups, for which one is justified in claiming a place, intermediate to that occupied by the two extreme forms mentioned. They are composed of cases of imbecility, with or without morbid impulsiveness, and others with primary delusional insanity united with weak-mindedness as a prominent factor. On inquiring yet more profoundly into the mutual relation of these different forms, and including in our analysis those transmitted insanities associated with epileptic manifestations, and with moral imbecility, we shall perceive that, not only is there an uninterrupted single line of gradation running from idiocy to primary insanity with systemized delusions, but that, in addition, there are numerous collateral branches springing from this parent stem at certain altitudes, which crop out into more or less independent developments. It is, hence, not possible to draw an absolute line of demarcation between the different forms comprising this series. The more extensive our observations become, the clearer do we recognize the existence of transition forms uniting into one great class all the strictly hereditary insanities. Startling as these propositions seem when advanced thus categorically, they are not in their essence new ones. Cloaked in less decided language, their expression may be traced in the writings of the earlier masters of mental pathology.

It is proposed to show in the present chapter that, as far as positive data have been obtained in the pathology of hereditary and congenital insanity, many of the cases coming under this head constitute a united group, charac-

terized and held together as an anatomico-pathological unity by the presence of a teratological anomaly.[1]

In order that sound conclusions may be arrived at in studying this relation, it is necessary to collate and compare the observations of numerous authors. Few single observers have been in a position to study a large number of these cases, both during life and on the autopsy table, and where alienists have had this opportunity, the methods of modern anthropological research have not been generally employed. Then again, where these methods have been employed, and suggestive results were obtained, these latter cannot constitute grounds for a psycho-pathological theory or doctrine, unless they are confirmed by identical or analogous results obtained in other identical and analogous cases. These considerations have induced me, in addition to the relating of my own observations, to detail and comment on the few cases recorded in the literature in which the degenerative forms of insanity were found associated with cerebral anomalies. Thus I have

[1] MOREL (Traité de la dégénerescence de l'espèce humain, Paris, 1857) recognized the affiliation existing between most of these groups, and identified their somatic resemblance in the common presence of the hereditary stigmata. His researches did not extend to a minute study of the brain in these cases. LE GRAND DU SAULLE, in a masterly series of papers (Folie héréditaire, Gazette des hôpitaux, 1873, Nos. 81, 82, 85, 88, 90, 94, 95, 98, 101, 104, 107, 110, and 113), has affirmed the propositions of his great predecessor, and fortified them chiefly by clinical observation. KRAFFT-EBING, in his earlier monograph on the criminal jurisprudence of the insane, lays great stress on the importance of the stigmata and specially of cranial deformity, in the recognition of certain chiefly hereditary and doubtful cases of insanity. In his recently published text-book (Lehrbuch der Psychiatrie, Stuttgart, 1879), he has drawn the line very sharply and happily between the "psycho-neuroses," as he terms the ordinary forms of insanity developed in individuals in whom no degenerative taint exists, and the "psychical degenerative states" which comprise the greater part of the cases with which we are here concerned. Unfortunately, as I believe, this distinguished alienist has treated of idiocy and cretinism, not only in a separate chapter of his work, but, as if to lay additional stress on their distinctness, he has interpolated chapters devoted to the study of paralytic dementia, alcoholic insanity, and cerebral syphilis between those which treat of the "degenerative forms" on the one hand, and idiocy and cretinism on the other. SCHÜLE, on the other hand, excludes the forms of "Verrücktheit" from the series altogether.

increased the extent of that, which if limited to my own personal observation, would have been a very narrow field.[1]

MONOMANIA WITH SYSTEMIZED DELUSIONS OF AGGRANDIZEMENT—ATYPY OF THE OCCIPITAL GYRI, AND OF GYRI ON THE MESAL FACES OF THE HEMISPHERES (own observation).

History of Mental Symptoms.—Thomas M——y, observed during the years 1876 and 1877 at the New York City Asylum for the Insane. The patient's age is stated by himself to be seventy-one; he presents numerous physical indications of senility, and some deterioration of the mental powers. He is somewhat above the average height and carries himself erect; his demeanor is exceedingly courteous though somewhat reserved, and it is only on being pressed adroitly that the systemized delusions, which constitute the chief ingredient of his psychosis, are enunciated. The patient

[1] The general conclusions of this chapter were first laid down in a printed publication by myself in January, 1878, in a review of the Transactions of the International Medical Congress of 1876, appearing in the Journal of Mental and Nervous Diseases, Vol. iii., No. 1. "We have in the purest form of so-called chronic mania (*primäre Verrücktheit, folie raisonnante*) found no pathological, but rather teratological changes; asymmetry of the brain, heterotopia of the gray substance, congenital defects in the claustrum, etc." In a later paper (Insane Delusions: their Mechanism and Diagnostic Bearing, ibid., Jan., 1880), I have given such views on the relation supposed to exist between these cerebral anomalies and the symptoms of the associated insanities, as seemed to be warranted by our present knowledge of anatomical physiology. SCHÜLE, in a communication to the journal mentioned, asserted his claim to having independently established a relation between cortical anomalies and certain mental affections. Aside from the fact that far deeper and different anomalies were claimed by me, in addition to those noticed by Schüle several months after my paper appeared, the interpretation made by that observer is so entirely different from my own, which repudiates the existence of any such thing as Schüle's "Denkzellen" (Handbuch, 489) that the independent origin of his views, and those laid down in this essay, which are the outgrowth of Meynert's teachings, is beyond question. As far as the priority of observation is concerned, a careful perusal of Schüle's work has failed to convince me that I was unjustified in stating that his views appear to rest on the previous registrations of SANDER, JENSEN, MUHR, and STARK. And to the latter author belongs the credit of having been the first to seek for an explanation of the intimate relation existing between structural and functional anomalies on the basis of Meynert's ingenious hypothesis. He failed, it is true, to designate the special forms and symptoms of alienation, to be connected with morphological "faults," or to extend his observations beyond the occipital lobe.

states that he had a large claim against the government of the United States, out of which he has been defrauded. The claim was based on the alleged fact that he had been deprived of his real estate property at the upper end of Blackwell's Island, the neighborhood of the present asylum for females, where M——y had been previously confined. I recollected having seen and conversed with the patient at that time, while a medical student, and was struck and the consistency of his delusional story as related in 1877, with that which he told in 1871, and as the then medical director of the asylum, Dr. Ralph Parsons, was kind enough to furnish me with his reminiscenes of M——y dating from an earlier period, I subjoin these as the first authentic accounts, chronologically speaking, obtainable. I should premise the quotations from Dr. Parson's communication by stating, that from M——y's own conversation, it was clear that his commitment to the asylum, at a much earlier date than the one mentioned by Dr. Parsons as the era of authentic records, was due to the manifestation of a delusional project connected with his being defrauded of an alleged real estate inheritance. There was no obtainable history of any acute psychosis.

"My acquaintance with Thomas M——y extends back only to 1857. His peculiarities were quite well known, but I will give you a brief statement that may possibly add to your information. No clinical records were kept at the asylum until the second year of my service as assistant, and for a long time after, none were kept of the old cases, but Mrs. M. G., the matron, will be able to give you a general statement of M——y's peculiarities previous to 1857.

"In 1857, Thomas was not in a state of high emotional excitation, nor was he at any time afterwards. Still his notions were always expansive, and his self-esteem was always well marked. He was courteous in his manner and address, but not at all disposed to impress others with ideas of his own pretensions or greatness. His manner, feeling, and address were simply such as would be expected of a courtly, prosperous man of business.

"Thomas entertained the delusion that he was the owner of the upper part of Blackwell's Island. He considered it a valuable property and proposed to improve it, so as to increase its commercial value. To this end he industriously made a mound to raise the extremity above high-water mark, and built a shanty thereon. His first design was simply to build himself a residence. Afterwards he conceived the idea of establishing a trading post at his house, and believed that he would make very large sums of money

by trading with the boats which passed on the river. As he was oftentimes made a prisoner at his shanty by the high tides, he constructed a causeway communicating with the high land. This he also looked upon as an improvement, but still his view was the common sense one, that the value of his property lay in the 'real estate' rather than in the 'improvements.' After the breaking out of the war (1860), he thought his property might be in jeopardy, and so built earth-works around his shanty on the top of the mound. Some parties then gave him three wooden guns for the defense of his fortifications, and dubbed him 'colonel.' He bore his honors meekly, and although he wore some decorations as insignia, never made a point of his military title. He had personal pride in accordance with his delusive idea of being a man of wealth, but did not entertain the idea of personal greatness unless perhaps to a slight extent, as the immediate result of the representations of others. He *romanced* about his possessions and prospects very much, as children do who 'play store,' but when he had purchases to make he paid in good money, and expected good money from visitors who were admitted to inspect his fortifications. He had delusions of wealth but not of personal greatness, or of being other than simple Thomas M——y, save as above explained. He had his ambitions, but it was to realize on his property, rather than to become or to be considered great."

In response to another inquiry, Dr. Parsons wrote, "M——y did assert that he had a claim against the Government, but his idea was entirely logical. When the Commissioners (of Charities and Corrections) wished to improve the upper part of the island, they drove Thomas away and 'seized upon his possessions.' Then he claimed that his property had been wrongfully taken from him, and that the authorities ought to and must make him restitution."

At the time I examined him, he was somewhat senile, but as courteous and business-like as depicted by Dr. Parsons. He claimed that the Commissioners of Charities and Corrections had recognized the justice of his claim by giving him "bonds" in return for his granting permission that his fort might be destroyed. It appears that actually some person had given him valueless confederate bills as such "bonds," and that he had furthermore compromised between the various military titles with which visitors were apt to regale him, by styling himself "Captain-General of the United States." He always used the plural "we" in speaking of the first person, as indicative of this rank.

He was at all times quiet and orderly, appeared resigned to "his

fate," and in relation to the "great injustice" done him said that he was getting too old to worry himself about it. It was impossible to drag him into any conversation calculated to expose the inconsistencies of his statements, as he evaded some questions, and gave general responses to others. Outside of his delusions already related, his conversation and conduct showed nothing abnormal, except when receiving presents from visitors, which he was too proud to solicit, but condescended to accept with considerable urbanity. To the last he maintained that the Government owed him one and a half million dollars for the destruction of his buildings and the annexation of his property.

Post-Mortem Findings.—No structural cranial anomaly; calvarium thin; Pacchionian granulations large and numerous; several opaque spots of milky whiteness in the arachnoid, especially over the parietal and frontal lobes; pia normal, vessels rigid, not atheromatous on the convexity, two atheromatous spots on the basilar artery, and one near the origin of the left middle cerebral artery; color and consistency of the cerebral tissues normal; endyma smooth and firm; lateral ventricles perhaps a little more dilated than is normal; considerable pigmentation of the large pyramids of the cortex; isthmus and cerebellum not examined microscopically; the cerebral cortex of every region appears normal under the microscope in the vascular, connective, and strictly nervous structures, with the exception of the widespread pigmentation of the larger cells mentioned.

Total brain-weight, 1,596 grammes (51 ounces +), membranes deducted; weight of right hemisphere,[1] 649.5 grammes; of left hemisphere, 657 grammes; of cerebellum, 161 grammes; of isthmus, 128.5 (by subtraction).

Convolutions numerous, sulci slightly gaping; frontal, central, and temporal gyri show nothing unusual. The intraparietal sul-

[1] In all cases where the weight of brain-segments is given in this essay, the parts weighed have been separated as follows: the membranous investments having been thoroughly dissected, and the involution of the hypocampa unfolded from the thalamus, the callosum is divided longitudinally, and the hemispheres reflected above, so as to expose the dorsal face of the thalamus. Careful incisions are now made following the line of the tænia above, and the optic tract below, these incisions being run into each other, and converging forwards, are continued so that the basilar gray and the chiasm are left attached to that segment which contains the thalami. We then have the uninjured cerebral hemispheres, including the caudate and lenticular nuclei, as well as the internal capsule, separated from each other and from the isthmus. The latter comprises the thalamus, the optici, the post-optici, and the peduncular tracts *minus* the cerebellum, which is removed by the methods in ordinary use.

cus of the right side terminates in the upper extremity of a deep sulcus, about ten centimetres in length, which is clearly the external occipital sulcus; if continued, this sulcus would reach the mesal border of the hemisphere, about one centimetre behind the internal perpendicular occipito-parietal sulcus. On the left side, the sulci mentioned do not join as on the right side, the intraparietal sulcus sends off a shallow spur which comes within a few millimetres of joining the external perpendicular sulcus. On neither side can the typical occipital gyri be identified. Instead, the occipital lobe on the convexity appears evenly divided into three triangular fields by a tripartite sulcus, and each field is thrown into folds, dipping into the depths of the tripartite sulcus mentioned, near the junction of its rami. On both sides, the occipital lobe appears richly convoluted in consequence, but on taking a general survey of the convexity, it becomes evident that the richness in gyri is apparent and not real. The entire lobe is disproportionately small, and the appearance of profusion in development is due to the absolute smallness of the gyri; in other words, we have a local *microgyria* to deal with. The gyrus of the cuneus joins the lower angle of the præcuneus instead of the fifth temporal gyrus, its usual termination; otherwise the mesal face of the occipital lobe is typical and well developed in striking contrast with the convexity. There is nothing abnormal on the ventral face of the occipital lobe, except at the apex where the prolongations of the ventral gyri exhibit a gradual transition to the microgyria, so well marked on the convexity. The dimensions of the corpus callosum unfortunately not registered; its splenium is short and thin. The mesal face of the frontal and parietal lobes presents a remarkable appearance. On first sight, it appears as if a complete sulcus ran from the lower part of the frontal end clear back to the perpendicular occipital sulcus, parallel to the sulcus calloso-marginalis; a similar but shorter sulcus, similarly parallel, is interposed between the edge of the hemisphere and the last-named furrow. There thus result four parallel gyri on the inner face of the parietal, and three on the inner face of the frontal lobe. On separating these gyri, and tracing the fissures, it is found that the upward turn of the calloso-marginal sulcus is present, and reaches the hemispheric edge as usual, but at its connection with the major portion it is interrupted by the gyrus running over and parallel to the gyrus fornicatus. This second gyrus, therefore, is as perfect as the fornicatus itself. The third and fourth gyri are less perfectly individualized, their distinctness is lost at the paracentral lobule

in front, and in the middle of the præcuneus behind. The internal perpendicular occipital fissure is normal. With the richness of gyri on the mesal face of the parietal lobe, this field is unusually high.

The cerebellum is normal in shape and proportions; the pons narrow and high.

The cranium not subjected to measurement; the occiput is sharp and the descent abrupt; the upper fossa deep but limited in circumference, and a marked feature, which was also noticeable during the patient's life, is a peculiar rise in the region of the sagittal suture, not demarcated from the general convexity. The base of the skull gives the impression of narrowness.

The only appearances found in this brain, to which any weight can be attached, are the convolutional anomalies. The pigmentation of the nerve-cells of the cortex, the slight gaping of the sulci, the opacities of the arachnoid, and the arterial changes are all attributable to senescence. The great height of the mesal face of the parietal lobe may have been a primary factor interfering with the proper extension of the corpus callosum backwards; under this view, the splenium of the latter can be supposed to have remained shortened, as its fibres did not find that impulse to development, dependent on the proximity of the occipital end-stations. The anatomical features of this case may be summed up as consisting, 1st, in an unusual development of the mesal gyri; 2d, in *microgyria* and atypy of the convexity of the occipital lobe; 3d, in defective development of the splenium; 4th, in abnormal course of the gyrus of the cuneus. These peculiarities were symmetrical.

IMBECILITY WITH MORAL PERVERSION—MENINGITIS AS A COMPLICATION SUB FINEM—ATYPICAL ASYMMETRY OF THE CEREBRAL HEMISPHERES AND OF OTHER PARTS OF THE ENCEPHALON. (Own observation.)

M. McA——e, baker, aged forty-five years, face and head unsymmetrical, hair on right side gray, on left, dark-brown with a few grayish patches, the demarcation between the two sides being

sharp; no body asymmetry. The patient was at the asylum but a few days, and the history of his psychosis was complicated by the disease to be briefly referred to. On admission, he complained of a severe pain on the right frontal region. His memory for past events was found fair, and aside from a tendency to violence of a treacherous character, and the enunciation of ambitious ideas of a feeble kind, relating to his physical strength, and which seemed to be rather in the nature of childish braggadocio than of actual delusion, he manifested no mental symptoms.

On the evening of the second day after admission, he exhibited a bland delirium, and his temperature the following morning was 101° F. The next day he again manifested ambitious ideas of the same character as those alluded to; it was difficult to determine to what degree these could be considered delusional, owing to the clouding of his mental life at most times, during the brief stay in the asylum, by the complication already present at his reception, and the fact that the patient at earlier times took an evident delight in misleading the examining physician. Towards the evening of this the third day, he again complained of a dull throbbing pain and a sensation of heat in the right frontal region; with this he was dizzy, and had a tendency to fall over forwards. In the night he had a stupid delirium, and the morning of the fourth day was found partially amnesic and aphasic, but still able to make himself understood. In the course of the day it was observed that hebetude was increasing; in the afternoon, his locomotion was found decidedly impaired, his gait partaking at once of an ataxic and propulsive character; clonic spasms were now noted of the left side of the face and the left thumb; the temperature was 99.5 [?]. On the fifth morning, the patient, who had been in sopor during the night, had two epileptiform spasms involving the left arm and face, and subsequently the entire left side of the body, and with deepening coma, he had a third, violent, and general convulsive attack in which he died the same day. Further data were unfortunately not obtainable; this was particularly to be regretted in respect to the questions of dextral preference and heredity.

Post-Mortem Findings.—Calvarium readily removed, slight adhesion of dura in right frontal region. A deep-yellow color of that membrane over the whole right frontal lobe, gradually merging into the normal color of the dura in the parietal region, is the first feature noted. The attachment of the falx shows a deviation behind to the left. Otherwise the dura, particularly that of the left side, is normal. On cutting into it, a turbid, somewhat milky

serum escaped on the right side; the fluid of the left side is sanguinolent and clear. It is impossible to separate the dura from the other membranes over the frontal lobes, in an area indicated in the sketch (Fig. 1). Here the leptomeninges and the dura are fused into a thick, dense common mass of membranous and pseudo-membranous layers, adherent to the cortex and inseparable from it. On vertical section, it is found that fibrino-purulent layers penetrate to the depth of the sulci, fill the meshes of the pia and arachnoid, and merge with the thickened and infiltrated dura into a combined thickness of more than half an inch at the focus of the disease, which is over the posterior third of the middle and upper frontal gyri. The fibrino-purulent infiltration extends further backwards than the adhesion of the meninges. The pia shows a distinct zone of a yellowish color, about half an inch in extent beyond the area of adhesion, and this zone detaches peninsular processes along the chief vessels of the convexity. These, however, do not exhibit the creamy yellow color of the chief disease area. On each side of the vessels, a white or whitish-gray streak, varying from less than one to more than three millimetres in width, is noted, which, on cutting, almost creaks under the knife; its consistency could be best compared to a well-sized parchment. I have never met with this condition in that extent, and interpreted it as the result of a subdued chronic inflammatory process.

The surface of the left hemisphere exhibited a marked arterial injection, the cortices of both hemispheres were firm and were of a rosy tint, with the exception of an area to be now described: extending from the middle third of the post-central gyrus, down transversely to the Sylvian fissure behind, to the middle third of the upper and middle frontal gyri, and including the *pars orbitalis* of the lower frontal gyrus in front; the cortex was pale and less firm, though still of sufficient firmness to bear hardening in bichromate of potash. In the posterior portion of the middle and upper frontal gyri and the middle third of the precentral gyrus, the white substance subjacent to the cortex was diffluent, particularly near the bases of the sulci, where small ecchymoses were numerously scattered through the pultaceous mass. As the cortex was quite firm here and inseparably adherent to the thickened and infiltrated membranous fusion above described, and the greater part of the centrum ovale was of normal consistency, a continuous gap was left between the two by the yielding and fluidification of the intermediate white matter which, nearly following the undulations of the cortex, extended over the area

described. Puncta vasculosa were numerous in the otherwise normal white substance of both hemispheres. The ventricular fluid was clear, the posterior cornu of the right hemisphere more capacious than that of the left; the endyma smooth, no evidences of inflammation either on the mesal faces of the hemisphere, except at the margin of the diseased area described, or at the base of the brain. Spinal cord not examined. Left posterior communicating artery of the Willisian circle absent.

Before the membranes were separated, an angular impression was noted on the upper mesal border of the right hemisphere, while the right occipital apex overlapped the corresponding apex of the left hemisphere, so that a projecting part of the left hemisphere was received in the indentation of the right. On removing the membranes, this deformity became nearly obliterated, and was noticeable only in the relative sharpness of the right apex as contrasted with the blunted and rounded left apex. A difference in every dimension between the left and right hemispheres, corresponding to the asymmetry of the skull yet to be referred to, was noted before a closer dissection was made. This asymmetry of the brain-halves was still more evident on removing the membranes. The gyri were simpler and less numerous on the left side, the course of the sulci differed in direction; the mesal end of the sulcus of Rolando on the right side, if prolonged, would have fallen three centimetres behind the analogous point of the other side; the left intraparietal sulcus ran directly to the mesal edge of the hemisphere, a short distance in front of the surface nick of the perpendicular internal occipital. On a superficial view, it would seem as if its terminus was composed of a junction of the external and internal (perpendicular) occipital sulci, but closer examination showed that the latter sulcus had the usual relations, though extremely near the apex of the lobe; the entire lobe appeared shrunken, the typical gyri could not be identified. The remainder of the hemisphere showed nothing atypical, the temporal apex was less prominent than the right corresponding one.

The internal perpendicular occipital sulcus of the right side reached the convexity two centimetres in front of the left and running into the posterior end of the interrupted intraparietal, *simulated symmetry* with the mesal end-piece of the left intraparietal sulcus; on the mesal hemispheric face, it ran the usual and normal course, converging with the sulcus calcarinus, to inclose a well-developed cuneus, contrasting with the fore-shortened though otherwise normal corresponding lobe of the left side.

The rest of the right hemisphere exhibited nothing of note as far as it could be studied; the surface of the frontal lobe could not be exposed, but the subsequent dissection by transverse cuts showed nothing that could justify the inference of a concealed surface anomaly.

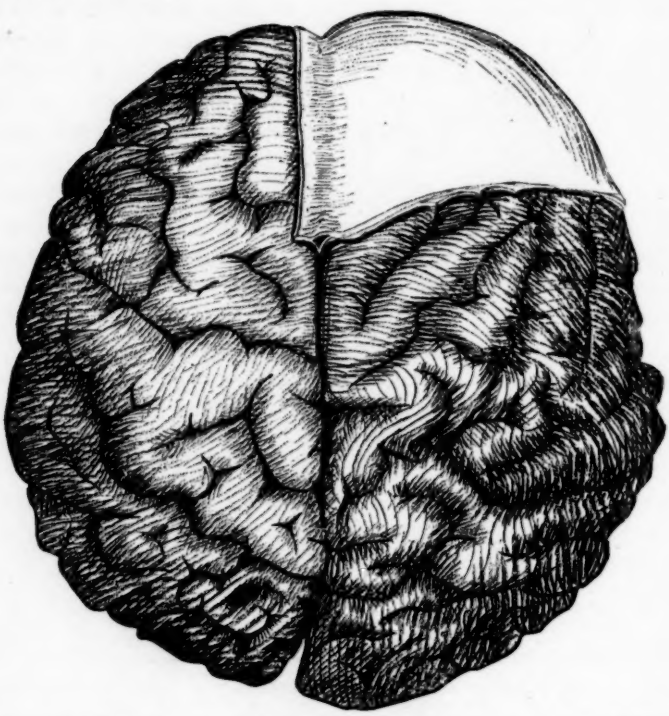

FIG. 1.—Dorsal view of cerebral hemispheres of patient McA——e, somewhat flattened out, restored from a drawing taken on the spot, and subsequently corrected after more complete removal of the membranes. The dura and other membranes could not be removed from the right frontal lobe for reasons explained in the text.

On section, the caudate nucleus of the right side is found to be fuller than that of the left, and rounder in its ventricular prominence. The lenticular nuclei appear to be equal, as also the thalami and crura (doubtful). The pons and oblongata join at a very obtuse angle instead of being directly continuous, and the isthmus, taken as whole, describes a slight S-shaped curve. The left olivary eminence is better marked than that of the right side; a transverse section shows that the dentated nuclei are symmetrically developed, that the pyramids are equal, as well as the halves of the ventricular floor. But the entire oblongata presents the appearance as if its right half had been crowded dorsad, and

the left half more ventrad, and the area of the right restiform mass is clearly greater than that of the left. The left half of the cerebellum appears on first sight fuller than the right, but measurement shows it to be only rounder, the right hemisphere being nearly a centimetre wider and also greater in the antero-posterior extent than its fellow. The microscopical examination, as far as it was made, showed nothing abnormal. The cortical elements were well-developed in specimens obtained from both occipital, the right parietal, and the left frontal lobes.[1] The septa of the pyramidal tract and the inner division of the oblongata were unusually dense.

The total brain-weight after removal of the detachable membranes was 1405 grammes; of the left hemisphere, 550 grammes; of the right hemisphere including the adherent meninges and inflammatory products, 619 grammes; of the cerebellum, 116; and of the isthmus (by subtraction), 119.5 grammes.

In this case, whose imperfect clinical history is regretable, the inflammatory lesion and the symptoms due to it can, I think, be readily eliminated as a complication of the brain deformity and the mental perversion based on the latter. For such inflammatory lesions limited to one hemisphere have never been observed to be the sole accompaniments, or to correspond in their development to the development of moral perversion of the character observed in this patient. The limitation of the pathological process to the better developed hemisphere is an interesting fact, and it is possible that a careful registration and comparison of similar cases may show that there is an actual predisposition to structural changes in brains presenting anomalies of a teratological origin. That these should seize on the necessarily functionally most active hemisphere need not surprise us.

Standing by itself, this case would not merit record, for the anatomical appearances only, were accurately registered. But the findings here deserve mention, if for no

[1] The remainder suffered from frost, and microscopic sections could not be obtained.

other reason, because they resemble in kind those in MUHR'S patient,[1] whose interesting life-history, supplemented by an equally exhaustive post-mortem analysis, is appended in part, particularly as the observations, and the conclusions drawn from them by Muhr, have not met with that attention among alienists which they seem to me to deserve.

"Ludwig Schw—— exhibited a defect in the development of one-half of his body and clumsiness in movements from infancy. He did not learn to walk until very late, and then it was with great difficulty that he could be induced to assume the erect posture. He preferably walked so as to support himself by a wall or other objects on the side which was defective. His figure was tall and slim, and a stoop was noticeable throughout life.

"He was noticed to be left-handed from childhood, the right side being affected with atrophy. The right foot was shorter and sparer, the right hand was smaller and more unserviceable than its fellow. Strabismus was observed from the period of adolescence; both ocular axes converged inwards and downwards, more so in the case of the left than of the right eye. Vision was defective on the former from an early period, and he was in the habit of twisting his head round so as to utilize the other eye in reading, ultimately he became completely amblyopic on both eyes. He had no sense of music whatever.

"Notwithstanding these corporeal defects and the cerebral defect to be detailed, this person attained a considerable degree of education. He passed college and the university where he studied law, and aside from this his legitimate study, he devoted attention to many collateral branches, receiving the best testimonials in the respective departments. Besides he obtained a fair knowledge of the Italian, French, English, and Sclavonic languages. He was a perfect master of Latin, had studied the whole ecclesiastical literature in that language, gave instruction himself in the different languages mentioned, and was constantly engaged at some one or other literary production.

"He shifted round a great deal among the different vocations that were open to him; he was at one time studying with a notary, at another engaged in the Department of Finances, at still another, in the Trade Chamber. All this time he manifested a

[1] Anatomische Befunde bei einem Falle von Verrückt'heit, von Dr. Muhr. Archiv f. Psych. u. Nervenkrankheiten, vi., p. 733.

morbid desire to enter a cloister, and at his thirty-sixth year he succeeded in being admitted to the novitiate in a Benedictine Institution, where he stayed, however, only one year. It was his habit to endeavor to attain any desired position by the circuitous channel of patronage, and from his boyhood up he had exhibited an anxious desire to attract to himself the attention of influential patrons. His moral sense was entirely perverted. He bored the dignitaries of the church with reformatory projects, was in consequence recognized as a lunatic, and sent to the asylum. Previous to this period his insanity had been so little suspected that at one time he had actually been appointed curator for the property of his insane sister, Marianna Schw——, by court, a position he held till the latter's death, that is, from 1860 to 1861. He had a decided antipathy to the normal gratification of the sexual desire, and was a persistent onanist to his dying day. He had remarkable views concerning marriage, and wrote a treatise in defence of polygamy, sustaining his position by means of voluminous quotations from ecclesiastical authors. Hallucinations could be demonstrated to have existed, dating from his twenty-fifth year. At that time he received the revelation that he was the Saviour of the world by means of hallucinations; he concealed this revelation for fifteen years, absolutely. Just previous to this he had delusions of persecution with a strong sexual tinge and of a repulsive and disgusting character. He then began to consider all remarks, even of the most indifferent character, made by strangers as applying to himself, and interpreted them as of great importance. He claimed that the Pope in declaring (1864) "that the Star which was destined to relieve the Church of its persecutors was about to appear," referred to him. In consequence of his delusive interpretations of remarks made by strangers he became involved in conflicts in restaurants, having gone the length of pronouncing the strangers intoxicated. In short, delusions of an expansive character were continually alternating with those of a depressive kind. Between this time and the asylum sojourn he had at different periods hallucinations of a ceremonial nature; in 1863 the Archangel Michael appeared with a flaming sword amid the sound of trumpets, to notify him that he should prepare himself for extraordinary events. In 1864, after a prolonged period of fasting and praying, he saw God himself in a vision, telling him that he was called to occupy the pontifical chair, at the same time he added. the vision informed the faithful in the church at the time that "this is my beloved Son, him

shall ye hear." The following year he saw the Virgin Mary, and observing that he was becoming bald, the next day declared this to be the tonsure which she had conferred on him. Previous to his admission to the asylum he had an occasional perception of the fact that his actions were erratic and that he was considered a fool, a fanatic and even a lunatic by the priests whom he was in the habit of persecuting with his attentions. In 1870, having been persuaded by the clergy whom he communicated his projects to, to consult an alienist, he was pensioned off by the government, under which he held a position at the time, and received at the asylum of Feldhof. Here he became gradually more perverse in his logic, and ceased to correct his delusions. While at the asylum he entered into unnatural sexual relations with a weak-minded epileptic, and the two were finally discovered together in a water closet, and transferred to separate parts of the institution. Whenever he had his periods of religious exaltation he indulged in onanism, and he was on one occasion found reading the legend of a female saint and masturbating at the time. He also had hallucinations of sexual congress with the female saints, accompanied by seminal emissions. He reached the age of 47 years.

There was a bad hereditary history in this case on both sides. On the paternal side nothing is known definitely as to the great-grand and grandparents of the patient. The latter had six children, of whom Charles (the father of the patient) was abnormal from infancy and notorious for his eccentricity. He died suddenly of cerebral hemorrhage. The next three children do not present a clear history; there are grave indications of heredity, however. The last two (females) founded families said to be mentally healthy.

On the maternal side an uncle was a priest, with a notable absence of all musical sense, and dying suddenly with cerebral hemorrhage. His sister, the mother of the patient, is said to have been of a normal mind.

Aside from the patient Ludwig Schw, there were six children in the family; the first, *Aloys*, of a romantic disposition, went to America and was never heard of again. The second is our case, the aforesaid Ludwig. The third, *Marianna*, had a beard on her chin, exhibited expansive delusions and died in the asylum. The fourth, *Justinus*, was born blind and died as a child. The fifth, *A*———, died insane. The sixth, *Francis*, is living; he is an engineer, right-handed, but cannot use his right leg as well as his left. He is without any mental defect, and has several sons, not

yet grown up to manhood, and so far as ascertained well developed, with the exception of *Emmerich*, aged 14. The latter, a bright boy, is left-handed, the right extremity being generally less voluminous than the left, and the right hand measuring half an inch (1.5 cm.) less in the metacarpophalangeal line than its fellow. He does not use this hand. The right half of his cranium is noticeably smaller than the left, particularly as regards the parietal boss.[1]

The examination of the brain of this patient showed it to be far below the average of the adult male brain in size and weight; the most remarkable feature was the notable and unusual asymmetry of its two halves. Dr. Muhr attributes this asymmetry to the reduction in volume of the left half of the cranial cavity and of the left internal carotid artery.

The greatest circumference of the skull is 48 cm., the occipito-frontal diameter 15.3 cm., from the radix nasi to the external occipital protuberance 17 cm., greatest width 13.5, distance between the auditory meati 10 cm., height from foramen magnum to vertex 12 cm. The distance from a point midway between the clinoid processes to the inner surface of the angle formed by the sphenoparietal suture is 57 mm. on the left, and 66 mm. on the right side.

The general impression created by looking at the skull is that the actually longer right half has clasped round the shorter left half so as to accommodate the general shape of the skull to an ellipsoid. It is also observed that the region of the sagittal suture is carinated, the suture itself being but little serrated. The temporal ridges rise unusually high so as to come within 48 mm. on the right and 36 mm. on the left side of the sagittal suture; they are also remarkably prominent. The frontal region is retreating, and the supraorbital margins are very prominent. The left half of the cranial cavity is reduced in every dimension, the ideal horizontal axis of the skull would have to be represented by a curved line. As if to compensate for the defect on the left side of the cranium the face deviates to the other side so that the vertical ideal plane of the skull is slightly S-shaped. The left cerebellar fossa is scarcely one-third as capacious as the right. The right transverse sinus is shallow and the

[1] A most remarkable deviation from the rule.

right jugular foramen narrowed, while the left sinus is well formed and the foramen of fair dimensions. The openings of the carotid canal as well as the canal itself are abnormally small on the left side; the left optic foramen being also smaller than its fellow. The clivus is very steep owing to the fore-shortening of the entire skull. The clinoid processes are unsymmetrical, the right ones preponderating.

This unusual degree of cranial asymmetry was the direct cause of the atrophic state of the left side of the encephalon, and in its turn due to the asymmetry of the great vessels supplying the skull and brain with blood, according to the interpretation of the matter made by Muhr. I subjoin his account of the vascular aberrations:

The aorta is very narrow at its origin: the Innominata is of normal calibre, and gives off a normal sized right common carotid artery, and a very small right subclavian, so that the right vertebral is undersized. The left common carotid is a slender trunk, and the internal carotid on that side measures 3 Mm. in diameter, while that of the right side measures 5. 5 Mm. The left subclavian is well developed, so that the left vertebral is larger than the right vertebral. The arterial walls are healthy in every respect.

On passing to a study of the brain itself, it was found that its deformity was partly due to a relative atrophy of all the parts of the encephalon lying to the left of the median line, partly to an actual absence of certain parts. The two halves of the cerebellum, for example, were so unlike each other that one half might have been supposed to be from a different brain than the one from which the other half was obtained, if they had been seen separately.

The difference is most marked on the inferior aspect, the left cerebellar hemisphere is a round lump, with gyri not running parallel, as in the normal cerebellum, but diverging in every direction, and the lobules appear twisted on themselves. The flocculus is rudimentary, the amygdala altogether absent on the left side. On that side the gyri (folia) of the inferior and posterior face number

eighty, on the right or better developed side only sixty. This discrepancy is due to the fact that in the former enumeration are included not only those folia which reach and are counted in the surface of the normal cerebellum, but also the collateral branches which here reach the surface, owing to the atrophic condition of the terminal lamellae.

The left cerebral hemisphere is in every respect unlike its fellow. It is shorter and less massive, the left parietal and occipital, and particularly the left temporal lobes are much reduced, and this reduction extends to the half of the corpora quadrigemina and the basal ganglia of that side. The left optic tract and right optic nerve are smaller than the right tract and left nerve; the left corpus mammillare appears to be absent, the right is well-developed. A great difference is observed to exist between the uncinate gyri of the two sides. The right olivary eminence is smaller, and the left auditory nerve narrower than its fellow.

On studying the cerebral convolutions, it is found that on the right as well as the left side there are deep anomalies. The right lower frontal sulcus runs transversely, and is, as it were, duplicated, representing an H The left superior frontal sulcus originates from the fissure of rolando and branches off extensively, sending prolongations to the Sylvian fissure. The sulcus calloso-marginalis reaches the cerebral surface of the left side in front of the point where the corresponding fissure of the right side reaches the surface.

The fissure of Rolando is situated further backwards on the left hemisphere than on the right. The left parallel fissure opens into the transverse occipital; there is a small concealed gyrus to indicate their separation. The right parallel fissure runs into the postcentral. On the left side the calcarine and parieto-occipital fissures fail to meet. Altogether, there is a difference in type observable on comparing the fissures of the two sides, these being more of the longitudinal pattern on the left—more of the transverse pattern on the right side. The length of the corpus callosum is 64 mm.; that of the right cerebral hemisphere 140 mm., of the left, 120 mm., the width of the former is 60 mm., of the latter, 50 mm.; of the right cerebellar hemisphere 50 mm., of the left, 33 mm. The right olfactory tract is narrower than the left.

It may be well to state that the length of the skeleton is 170 centimeters, the capacity of the cranial cavity 1,100 cubic centimeters.

ORIGINAL WEAK-MINDEDNESS.—SUSPICION OF CO-EXISTING EPILEPTIFORM ATTACKS—ASYMMETRY AND ATYPY OF THE CEREBRAL HEMISPHERES—(Own Observation in Part).

The observations of the following history were furnished by Professor Wm. B. Hazard, M. D., of St. Louis. It opens with the account of a crime, which led to the examination of the subject's mental condition, and which gains interest through the remarkable *post-mortem* findings discovered in the brain after execution. The history is in great part based on the evidence obtained at the trial:

On June 19, 1878, Franz Vosz, a respectable German, aged about sixty years, was engaged with one of his workmen in placing a large stone (about three by four feet square and six inches in thickness) in the foundation of a house that he was building. The defendant, Redemeir, had been noticed for about half an hour sitting upon a stone fifteen or twenty feet distant. Redemeir was not employed by Vosz, and there had been no conversation between them, although they were neighbors and acquaintances. Suddenly, without any warning of any kind, the accused arose from where he was sitting, approached Vosz, and, applying the muzzle of a revolver to his head, shot Vosz, who fell and immediately expired. The workman who was assisting Vosz asked Redemeir: "How do you kill your friends?" upon which the latter shot again into the already dead body, saying, "This is the way I do it." Redemeir then walked leisurely away, and was arrested a short distance from the scene of the homicide. The coroner summoned a jury and investigated the cause of death. At the inquest the prisoner was perfectly calm and collected, and stated that he simply acted in self-defence, as Vosz and his workmen were preparing to kill him with the rocks they were handling. An excited crowd of several hundred men collected prepared to hang the prisoner. A squad of thirty policemen had great difficulty in preventing the execution by mob law. Redemeir seemed perfectly indifferent as to the result of the struggle between the mob and the officers of the law.

An indictment was found against him charging him with murder in the first degree. When called to plead to the indictment in open court, he pleaded *guilty*. The effect of such a plea was

explained to him by the Court, but he insisted upon entering this plea. The Judge again and again explained the effect of so doing, but he persistently refused to heed what was told him, and the death sentence was pronounced with great emotion by the Judge, Redemeir stating simply that he was guilty, but had acted in self-defence, as he could show when he should have a trial.

The Court had appointed A. N. Merrick, Esq., to defend him, but the attorney was not present at this remarkable scene. A few days later the sentence above referred to was set aside by the Court, and the trial was set for the following December.

The plea of self-defence was the only one that could be drawn from him by his attorney. This was so evidently absurd that that of insanity was set up in his behalf. To this he strongly objected, stating that his attorney was "a crazy man" to think of such a thing.

The trial took place in due time, and expert evidence was given, unfortunately on the basis of hypothetical questions.

It was in evidence that Redemeir had never worked for Vosz, had never had any business transactions with him, and had never had any quarrel with the latter except a slight dispute about paying for beer, some two years before. On the occasion referred to Vosz was paying for beer for several friends; Redemeir was present, but was not invited to drink with the others. He asked Vosz if he would not pay for his beer also; he was answered "No, you are young enough to pay for your own beer." Redemeir admitted the fact and paid for a glass for himself. This was the only semblance of a dispute ever alleged to have taken place between them. In fact, the prosecuting officer illustrated the difficulty of alleging a motive, by claiming that two glasses of beer which the accused had taken on the morning of the homicide might be a factor in the crime. The prisoner was speedily convicted, and in due time sentenced to be hanged on St. Valentine's day, February 14, 1879, much to the gratification of the daily prints that had been industriously fanning the passions of the people to light up as great a flame as possible against the "insanity dodge." The manifest want of motive, except that set up in an insane mind by the presence of a delusion of mortal terror, had no effect upon the opinions of some of the witnesses. The case was carried to the Court of Appeals, which affirmed the sentence of the lower court. Thence it went to the Supreme Court of the State, which, by a majority of one, affirmed the finding of the inferior tribunals. The prisoner was resentenced to die on April 23, 1880.

Dr. Hazard visited the prisoner four times after his conviction, and he presented so many evidences of mental unsoundness that an affidavit was drawn up setting forth reasons for considering the accused as now insane and, hence, unfit for execution, which was submitted to the Sheriff of the city for his consideration. A jury of twelve was then convened by that officer to try the question, "Has the prisoner become insane since his conviction?" the true intent of the law being evidently to ascertain the actual condition of the prisoner on the eve of execution. This just meaning, if it was the meaning of the statute, was evaded by the jury. They found that the prisoner had not *become* insane since his conviction. The question as to his present mental condition and at the time of the homicide was not entertained.

The mother of the accused testified on behalf of her son. She was an aged woman, evidently of the lowest order of intelligence. She spoke of her son as suffering from frequent headaches of the most violent character, but stated that she had not noticed any change in him from his ordinary behavior during the weeks and months immediately preceding the homicide. Upon this one of the experts based his opinion that there had been no change in the character, modes of thought and of action, indicative of insanity.

From an attentive consideration of the circumstances attending the homicide, Prof. Hazard became strongly impressed with the idea that Redemeir was an epileptic. There did not appear upon the trial the slightest evidence of his ever having experienced a symptom of that disease.

There was no description of attacks of convulsions, of momentary unconsciousness or of maniacal attacks of long or short duration. Besides the prisoner seemed to recall without difficulty all the facts in relation to the homicide. His mind seemed to be occupied with the one idea that he had to kill Vosz to save his own life. This he repeated time after time with the greatest earnestness and persistence. When called upon, at the time that the final sentence was pronounced, to state any reason he might have to give why he should not suffer the extreme penalty, he explained to the Court that he had simply acted in self-defence; he attempted to show the relative positions of Vosz and himself, going down upon his knees to show how Vosz was picking up the stone with which to kill him. He could not be made to see the absurdity of his statements.

I quote further from my informant: "Until February, 1879, the writer was without confirmation of his mere suspicion derived

from a consideration of the prisoner's conduct. In that month it was incidentally learned from a fellow-prisoner of the accused that the latter was subject to frequent attacks that can be interpreted only as being of the vertiginous variety of epilepsy.

"The writer was told that Redemeir frequently became unconscious; at these times he sometimes falls from the chair upon which he is sitting, and that he sleeps afterwards. On the writer remarking that these symptoms looked like epilepsy or 'the falling sickness,' the narrator said: 'No; he does not have any fits at all, he is only a ——— fool!'

"In March last the writer saw Redemeir for the first time. His general appearance indicated mental hebetude. On being asked about his attacks of unconsciousness, he stoutly denied them; said that he was not a lunatic, that his lawyer was 'crazy' to set up that he (R.) was insane; that all he wanted was a trial of his case, when he could show by witnesses that he had acted in self-defence."

To the last moment he ranted about his witnesses, who could prove that he "acted in self-defence," and it was perfectly evident that, with the rope around his neck and his feet on the trap, he had, if any, a very inadequate conception of what was to be done to him.[1]

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[1] The *St. Louis Republican* contains the following account of the reading of the death-warrant to Redemeir: "Mr. Wilkins returned the salutation and opened up the portentious-looking document. Redemeir manifested no curiosity when the deputy began to read. For a time he kept his eyes fixed upon the ground. It would have puzzled a physiognomist to discover any peculiar emotions playing about his features. But for the restlessness of his downcast eyes his countenance seemed perfectly stolid and expressed no more interest or emotion than so much stone. After a time he looked up, but his eyes did not rise above the range of the paper. There was a puzzled look about them as the technical phrases in which the document was couched fell upon his ear, but they expressed no conception or appreciation of their dread import. He seemed to be merely listening by sufferance to a certain necessary formula in which he was not particularly concerned. As the words continued to fall from the lips of Mr. Wilkins, there was no perceptible change of expression in his features. There was an unmeaning or vacant stare in the eyes, although they were restless and unsettled in their movements. When the words "hanged by the neck until dead" were read from the warrant, they did not arouse him in the least from his almost lethargic state. He did not start or by the least apparent change of countenance indicate that he appreciated the import of the words. The same stolidity of demeanor characterized him throughout the entire reading of the document. At length the unpleasant task was ended, and Mr. Wilkins proceeded to fold up the papers. Suddenly and without the least apparent motive, judging from his

After the execution the encephalon was sent to me for examination. I premise the account of my findings by the account of the cranial peculiarities furnished by Dr. Louis Bauer, Professor of Anatomy at the St. Louis College of Physicians and Surgeons.[1]

"The first and most striking feature is the complete ossification of the lambdoid and sagittal sutures and a partial ossification of the coronal suture. About the place where the lambdoid and sagittal sutures unite, there is a considerable deposit of new bony structure (hyperostosis), much more massive on the right side than on the centre or left. From the centre, that is to say, the angle of the occipital bone, a broad band of new bony structure extends along the sagittal suture until it reaches the frontal bone. Over the greater part of the skull isolated deposits are noticeable in every direction, and discriminate themselves from the principal bony structure of the skull by their white and almost chalky appearance.

"The walls of the skull are in every direction abnormally thin. At some places, as, for instance, the parietal eminences, the bones are translucent. A similar translucent place is on the

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previous demeanor, his face underwent a remarkable change. His countenance, impassive and quiescent before, was suddenly transformed, and the self-considered victim goaded to desperation instantly stood revealed. His nostrils distended, and his eyes glittered fiercely, though spasmodically, as if his mental faculties were disturbed.

"I don't think that thing's right," he said in an intense, concentrated tone, glancing for a moment in an unsettled way at the document. "They charge me with murder in the first degree, and they can't convict on no such charge. They are all a set of rascals," he said, rapidly working himself into a passion, "and they can't find me guilty of that crime." He was about to continue in the same strain, when his attention seemed to be diverted for the moment, he appeared to have lost the thread of thought, and what he would have said was lost in a few mumbling unintelligible utterances. One of the deputies at the moment quickly advanced, and in a soothing tone asked Redemeir to step inside the cell, as he wished to see him for a few moments. The momentary feeling had passed away from his countenance, and he passively submitted to be led into his cell. Once in there, he took a position in the middle of the room, and seemed for a time endeavoring to collect his thoughts. When the door was closed, that he might be prepared for his march to the scaffold, he still stood in the same place. His chin had fallen upon his breast, and to all outward appearances he was lost to consciousness of his surroundings."

[1] *St. Louis Clinical Record*, August, 1880.

right parietal bone, probably produced by one of the pacchionian bodies. There are two more translucent places alongside of the internal frontal spines. There is no trace of the frontal sinuses ; the skull is thicker at the junction of the lambdoid and sagittal sutures, but even there it has a thickness of less than half an inch. Almost everywhere along the division the external plate comes in juxtaposition with the internal plate of the skull and only in a few places can a narrow line of diploë be discovered. At one place, corresponding to the upper half of the squamous portion of the temporal bone, both plates conjointly have a thickness of scarcely half a line. There is an absence of foramina for the passage of emissary vessels. The skull is of rather smaller dimension than should be in a fully developed male adult: the fronto-occipital diameter, six inches and a half, being unusually short when compared with the transverse diameter, five inches and a half. Finally, there is a marked asymmetry of the skull to the effect that the left side is bulging out more, when measured from the centre, than the right side, and this bulging is posterior to the corresponding one (of the opposite side)."

The conditions of the cerebral vessels as to injection, and certain other appearances due to the mode of death, are omitted from the following report of the cerebral examination.

The brain, as a whole, was in a good state of preservation. The surface of the cerebral hemispheres and of the isthmus had hardened to some extent in the course of the transportation, and no difficulty was experienced in making the naked-eye dissection of the parts. Here and there softening of the sub-endymal tissues had taken place. The discoloration of one of the thalamic tubercles, mentioned in a previous informal communication,[1] was shown, on subsequent examination, to be partly due to the exposure of the deep gray of that ganglion through surface erosion, and to the hemorrhagic suffusion of that region, which was evidently attributable to the mode of death. The hardening of the tissues was completed in a bichromate of potash solution. In many regions of the cortex the most superficial parts were overhardened, this being evidently due to the use of the necessarily concentrated solution accompanying the specimen in transportation. The

[1] *St Louis Clinical Record*, May, 1881.

ependymal layer, therefore, crumbled under the knife in many places. Otherwise, the cortical tissues were in good preservation. I was less fortunate with sections from the pons and oblongata. On the one hand the basilar faces of those parts had been over-hardened and were friable, while the sub-endymal portions had not hardened at all. This, in view of the asymmetry existing in these parts, observed on examining the intact organ, was extremely unfortunate. The surface of the brain being discolored by the preservative fluid, little could be noted of the naked-eye appearances. The vessels everywhere were moderately engorged, and at the floor of the fourth ventricle three small sub-endymal hemorrhages were noted. These appearances were attributed to the mode of death.

The endyma of the lateral and the fourth ventricles presented a decided ground-glass appearance. This was most marked in the region of the *alæ* and of the *striæ corneæ*, where larger granulations were found few in number and very transparent.

For reasons that will appear, the posterior portion of the right hemisphere was not dissected. Dissection of the remainder of the cerebral hemispheres revealed the existence of five small serous cysts. Four of these were found in the left hemisphere, as follows: 1st. A cyst of a round shape measuring eleven millimeters in the largest diameter, about sixteen millimeters from the apex of the occipital lobe, and above the imaginary line of prolongation of the posterior ventricular coruna. 2d. A cyst of an oval shape measuring five millimeters in length in the white substance of the second temporal gyrus. 3d. Two round cysts deeply situated in the white substance of the parietal lobe, of lesser dimensions, not accurately noted. The fifth cyst was found in the centrum ovale of the right hemisphere in the parietal region and midway between the convex surface and the ventricle. Before the membranes were removed I was struck by an apparent difference in mass of the two cerebral hemispheres. The fluid being drained from the hemispheres, each was weighed, and a discrepancy of forty grammes, or about one and one-third ounces Troy, in favor of the right hemishpere found. The right hemisphere weighed 696 grammes, and the left 656 grammes.[1]

[1] This shows a considerable increase in weight by the hardening process. The weight of the entire cranial contents, exclusive of dura mater and including the cerebellum, pons, medulla oblongata and other membranes, having been 49 ounces avoirdupois, or 1,371.6 grammes. The first weighing was roughly done, and was not strictly accurate. The potash salt is very heavy, and the specimen was five days in the solution before it reached me.

That the difference in weight between the two hemispheres was the expression of an aberration in the cerebral development, is sustained by two series of facts, namely, the peculiarities in the convolutional type, and the proportions of the great ganglia of different sides.

The convolutions in general were few, large and well marked. The occipital and parietal lobes preponderated in mass as compared with the temporal and frontal. The latter were greatly hollowed out on the orbital face, and the gyri here found were few, simple and typical. (Figs. 2 and 3.)

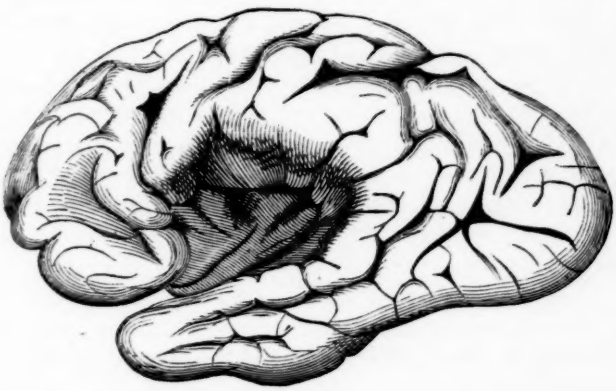

FIG. 2.

On the whole, the convolutions of the right hemisphere were better marked, and the secondary folds more numerous than those of the left hemisphere, and the type of the convolutions presented differences on the two sides. The most pronounced differences were exhibited in the Island of Reil and in the occipital lobe. The Island of Reil on the left side (Fig. 2) had fewer and flatter gyri than that of the right side, and was not far different in its general aspect from that of an orang-outang in my possession. The right island had six folds better marked than those of the left side, but their type was more decidedly radiatory, a fact in relation with the unusual shortening of the insular field, to be referred to further on.

The external perpendicular occipital sulcus, which Bischoff[1] never found in the adult human brain, though Ecker,[2] without de-

[1] Bischoff. Die Grosshirnwindungen des Menschen Abhandl d. Bair. Akad d. Wiss. Bd. ii. Abth.

[2] Ecker. Convolutions of the Brain.

tailing the specific instances, claims to have seen it, and which has been found persistent in a case of imbecility with mental perversion by Sander, and also in a perfectly normal individual by Meynert,[1] was finely marked upon the right side of the brain under consideration. This interesting anomaly I considered it desirable to preserve[2] permanently, and I therefore did not make a dissection of the right occipital lobe, but preserved this, together with the rest of the posterior half of the same hemisphere as a whole.

The fissure was very deep, its posterior wall was slightly beveled, and covered several secondary gyri of its anterior wall. It differed in disposition from the similar fissures described by Meynert and others, in that it did not, as in these cases, unite with the internal perpendicular occipital sulcus, and thus simulate the arrangement found in the anthropoid apes. It was merely the unobliterated external occipital fissure of the embryo, and as in the latter, its medial end, if prolonged, would have fallen behind the internal perpendicular occipital sulcus. The anomaly consisted, therefore,

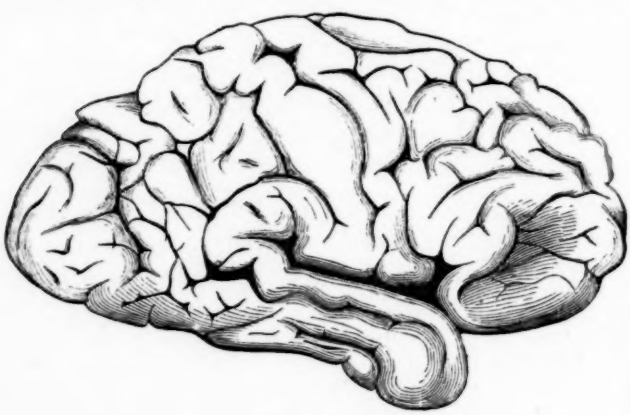

FIG. 3.

in the preservation of an embryonic feature. It is curious, in this connection, that the arrest of development should have involved the generally better developed hemisphere. On the left side, the gyri and sulci were few and simple, but typical, the external perpendicular occipital sulcus being interrupted by a broad crossing gyrus.

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[1] Archiv fuer Psychiatrie vii.

[2] The specimen was exhibited at one of the regular meetings of the N. Y. Medico-Legal Society.

On making a series of transverse vertical sections through the hemispheres, it was found, first, that the average cortical thickness was the same on both sides, and normal; second, that the great ganglia were of relatively large dimensions, and the white mass of the hemispheres, aside from the internal capsule and the other detachments mediating the connection of the cortex with lower centres, relatively reduced. The right caudate nucleus appeared to be of bolder contour on the right side; the right lenticular nucleus presented a larger section area by about twenty-five per cent. than its fellow of the opposite side; it was much shorter, however, like the insular territory of the same side, and in corresponding sections, the posterior end of the left lenticular nucleus was struck, while the right was absent. The right nucleus was rounder, the left more triangular in contour in corresponding altitudes.

The olivary bodies were unsymmetrical, the right one being flatter and smoother than the left; in transverse sections no difference between the olivary nuclei, beyond that which occurs in healthy persons, could be found; the asymmetry was ascertainably one of prominence only.

No anomaly was found in any of the blood vessels at the base of the brain either in their structure or arrangement.

The microscopic examination, as far as it was successful, was limited to the cerebral cortex. Imperfect sections were obtained from the ventricular part of the oblongata, which showed nothing abnormal. In many places the ependymal or barren layer of the cortex could not be kept intact in sections; in others perfect sections were obtained. The sections were taken from every portion of the cortex excepting the half of the right hemisphere. A brief glance through the specimens showed that there were no histological morbid *change* in the cortex. Slight, and in places, considerable accumulations of hæmatozin, of fatty granular masses in the adventitia, and of pigment in the larger pyramids were found generally throughout the specimens examined, as these are found also in perfectly healthy individuals.

The ganglionic elements appeared entirely healthy, the blood vessels fairly so, and also the neuroglia. I had a series of cortical specimens from a woman who had committed suicide by shooting, and whom I had seen in consultation with Dr. E. C. Harwood of this city, as well as other specimens from sane, insane and imbecile subjects for comparison, and I found a considerable difference in the proportionate thickness of the cortical layers,

similar in character to, though less decided than that found by myself in the case of the imbecile, W——d.

Taking the suicide as the normal type (Fig. 5), I found, as the most pronounced difference, a greater thickness of the barren or ependymal layer of the cortex (Fig. 4), that is the layer devoid of nerve cells, and which is found proportionately thicker in lower animals than in man, according to the researches of Meynert, myself, and of Bevan Lewis. In places the discrepancy was twice as great as that represented in the accompanying figures, at others

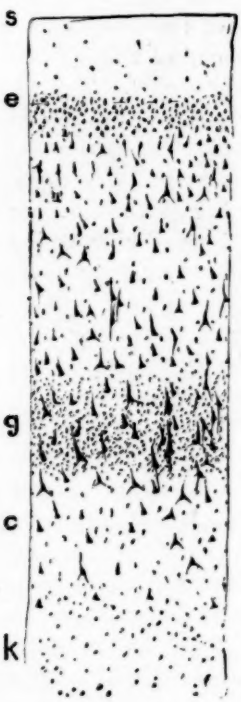

FIG. 4.

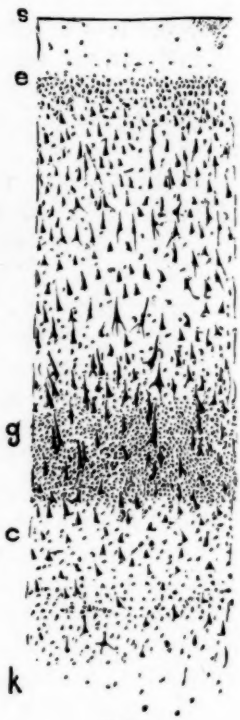

FIG. 5.

it was less, and in some localities no discrepancy could be detected. There are considerable local variations of this feature, and only from a large number of observations can any inference be drawn. The figures given illustrate the average difference between the standard cortex selected and that of Redemeir.

There was one peculiar appearance noted in Redemeir's cortex which may be properly discussed under the head of "morphological" appearances, for I doubt the propriety of ranging it as a

pathological change. This consisted in the presence of round bodies comparable to the nuclei of nerve cells with a thin or no mantle of protoplasm and presenting every gradation from the free nuclei of the neuroglia, so-called, to nerve cells with imperfect process (Fig. 6). Such bodies occur normally in large numbers in the nucleus lenticularis,[1] in the cortex of the rodentia[2]

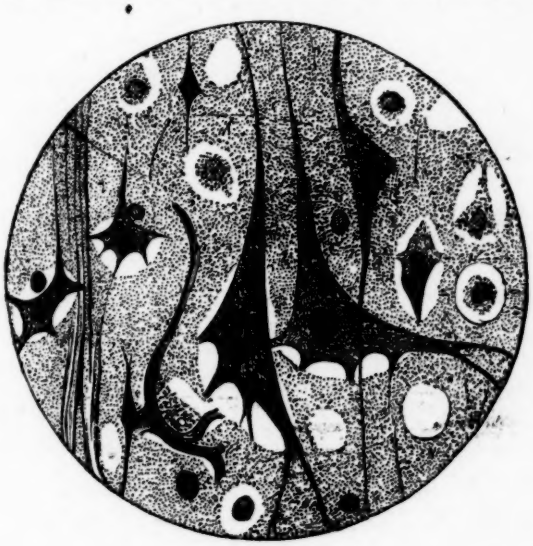

FIG. 6.

and in very small numbers in the human cortex, increasing under certain pathological circumstances, such as general paralysis of the insane.[3] In the latter case, however, these bodies present certain characters not found in the other instances, differences which are consistent with the view I would present as to their real signification. Their constant presence in different parts of the central nervous system in healthy animals, such as the rodentia (Forel) and the chiroptera (own observation) proves that they are not necessarily pathological. Found in the cortex of *lower* animals and in the *lower* and functionally superseded centres of

[1] Henle. Anatomie iii. 2.

[2] Forel. Archiv. fuer Psychiatrie, vii.

[3] Ibidem, and own observation. It is worthy of note that the protoplasm of these bodies is not stained as well as the protoplasm of perfect nerve cells. Among the latter, however, there are great differences, probably related to varying states of nutrition. In normal brains pale and deeply stained cells are seen side by side.

higher animals, it seems but natural to consider them as imperfectly developed nerve cells. Their appearance as a slightly different variety in the last stages of paralytic dementia could be explained on the ground that in regressive metamorphosis a similar scale is run through that marks progressive development. As far as our present knowledge extends, their presence in the human cortex in such large numbers as in the present case is anomalous, and I am inclined to consider it as an evidence pointing in the same direction as the other observations found.

From the generally low type of cerebral structure, the atypical asymmetry of the hemispheres and the great ganglia, the persistence of an embryonic feature in the occipital lobe, the thickness of the barren cortical layer and the presence of another anomalous feature in the cortical elements, only one conclusion can be drawn, namely, that the subject from whom this brain was obtained was an imbecile; and in the light of our knowledge of the life history of persons in whom similar anomalies have been discovered, an imbecile who should be classified in that large group of hereditarily degenerated subjects in whom, with the general background of imbecility, are often found either epileptic and epileptiform seizures, impulses or delusions, moral perversion and pathological fury. So far as the photograph[1] in my possession permits of a conclusion, this subject had not only asymmetry of the face, but also the general expression of the subjects of these conditions. It is unfortunate that more of the family history is not obtainable than that which I have thus far been able to learn of.

The changes of the ventricular endyma are such as frequently occur in the insane, and in those suffering from chronic meningitic and hydrocephalic disorders. Whether they are to be regarded in this instance as a relic of some long past pathological process or not, I am not prepared

[1] The only photograph of Redemeir that could be obtained was one taken when he was nineteen years of age. This is a very poor one, the face being shaded by a heavy cap.

to state. I have found them where the lepto-meninges appeared quite healthy, and do not regard it as impossible that they may be the result of repeated congestive states. Their occurrence in cases of epilepsy of long standing, where I have found the membranes as healthy as they seemed to be in this case, is in favor of this view. That some morbid process had been established in Redemeir's infancy, or earlier, seems to be indicated by the findings of Dr. Bauer, who examined the cranium and found the sutures obliterated, as stated in the quotation from his report.

IMBECILITY WITH UNSYSTEMIZED DELUSIONS OF PERSECUTION AND AGGRANDIZEMENT—HETEROTOPIA OF THE GRAY SUBSTANCE.

——— K———y; as in many of the pauper insane, unfortunately, no perfect previous history obtainable. The patient presented the appearance, manner and action of an original imbecile, was quiet, but incoherent, and asserted that he was "Emperor Alexander" of Austria; he also asserted that "Governor Bergen" brought him to prison. It appears that he was on a previous occasion in a Rhode Island asylum. In speaking of his persecution by "Governor Bergen," he declared that he was poor, and enumerating all possible crimes *seriatim*, declared his innocence of each of them very pathetically. The patient's physical condition was good on admission; later a broncho-pneumonia developed, with which he died. A thickness of speech was observable, which led to a careful inquiry as to the existence of paretic dementia, particularly as his pupils were contracted and unequal. But there was no fibrillary tremor, nor tremor of the hands, nor any change in his mental symptoms indicating the progress of such an affection. His pupils reacted well to light and on accommodation. He complained much of headache latterly, and had a tendency to lean his head forwards against a wall or other firm object.

Post-mortem Findings.—Membranes healthy (cranial peculiarities not noted); cerebral tissues normal in appearance, blood-vessels healthy, no anomalies of the gyri; the frontal lobe appears to preponderate disproportionately over the temporal and occipi-

tal. A lipomatous tumor is found occupying the place of the anterior inferior vermis of the cerebellum, which is crowded away and atrophied. This growth has a rich lemon-yellow color, and contains very few blood-vessels ; microscopic examination shows it to be made up almost exclusively of fatty cells, some containing crystallized fatty bodies, a delicate connective tissue framework and a thin capsule, staining in carmine; it reached the ventricular floor on the inner side of the left brachium conjunction. The ventricular contours (in the hardened specimen) did not seem to have been disturbed, and the nervous tissues were healthy. There is an oval mass of gray substance, measuring two centimeters in its greatest cross section, and one and a half centimeters in its lesser cross section, in the anterior third and ventral part of the internal capsule of the left cerebral hemisphere ; it extends three centimeters antero posteriorly. It is composed of elements of the same size and shape as those ordinarily occurring in the lenticular nucleus, but has no connection with that ganglion or the caudate nucleus; the tissue is of a reddish-gray color, and gradually merges into that of the surrounding white substance. The upper part of the claustrum is defective ; in its lower part, and in the nucleus amygdalæ several white strands are noted, not hitherto found by me to interrupt the gray matter of these ganglionic masses. In the right hemisphere a mass of gray matter is found a few millimeters in thickness, and two centimeters in its curved length, running parallel to the gray matter of the floor of the calcarine fissure, and sending a spur towards the surface ; two smaller masses showing similar relations are found in the inferior frontal and second frontal gyri of the right hemisphere respectively. The extreme end of the left frontal lobe contains several faint indications of small gray masses, which, on microscopic examination, appeared to be free nuclear accumulations. All the masses described are of the ordinary consistence of gray substance, somewhat less firm than the cortical tissues, but fully as firm as the outer articulus of the lenticular nucleus. None of them, except the one described as situated in the internal capsule, are more than a few millimeters distant from the cortex. The examination of hardened specimens, except of the pons and cerebellum, is frustrated by their freezing.

In this case the effects of the cerebellar neoplasm can be readily excluded, evidently having had no essential connection with the mental symptoms displayed. Heterotopia of

gray substance in the cerebrum must be always regarded as an abnormal occurrence; in the cerebellum it may be found in perfectly healthy individuals. But here the mechanism of the anomaly does not imply a deep deviation from typical development. The cortical laminæ of the cerebellum are thickly crowded, lose their connection with lower gray masses late, and are brought into relations with fibre masses which carry their intercalar stations with them. In all these points it differs from the cerebral hemispheres, whose gray masses are widely separated at an early period of development, and whose tracts do not carry their intercalar stations but connect with preëxisting ones. It is the fibres of the capsules which separate an originally common gray matter into a cortical and sub-cortical portion,[1] and where this is not accomplished in normal completeness we must refer the anomalous presence of gray matter to a deficient growth energy, or an aberrant course of the white fasciculi. The substance composing the heterotopia shows a structure like that of the basilar ganglia, and it is reasonable to suppose that they have been cut away from their parent bed by aberrant or late developed conducting tracts. The case of encephalocele with heterotopia described by Muhr,[2] seems to support this explanation; here the extension of the cortex through a cranial hiatus seems to have provoked the dragging away from their normal site of gray masses, having a structure similar to that of the basilar ganglia in some respects, to that of the cortex in others. The significance of such aberrant location of gray matter, if attributable as here claimed to an erratic development of the white centre of Vieussens, is rendered clear. It will be referred to in detail as we proceed.

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[1] Architecture and Mechanism of the Brain.

[2] Beitrag zur Kenntniss der Encephalocele anterior, Arch. f. Psych, viii., 1.

ORIGINAL IMBECILITY WITH EPILEPTIFORM AND OTHER PECULIAR MOTOR SYMPTOMS, DEFICIENCY OF CORPUS CALLOSUM AND ATYPICAL ARRANGEMENT OF THE MESAL GYRI. (Own observation.)

S. R——n, of Swedish nativity, aged twenty-nine, admitted to the City Asylum, of which he had on a previous occasion been an inmate, in September, 1875. The patient's father had contracted syphilis prior to his marriage, otherwise nothing noteworthy could be gleaned regarding the family history. R——n had always been weak-minded; there is a history of convulsions extending to his seventeenth year, when they ceased. In his nineteenth year the patient became maniacal, suicidal and destructive for a short period, after which he was noted to be stupid, and for years to indulge in rhythmical automatic movements, which appeared from the relatives' account to be an agreeable occupation to him. In 1873 a convulsion occurred involving the entire body; the convulsions previously noted had been unilateral. After the last admission the patient was found to be weak-minded and taciturn, but within a few days this changed; he took a more active interest in his surroundings, displaying a restless and purposeless activity and announcing stupid projects, evidently imbibed from some paretic dements who were in the same ward. He was occasionally obstinate and violent; at such times refusing food without assigning any motive for this refusing. The expression of his face, his actions and conversation all corresponded to the ordinary conditions of imbecility; the patient could give no information as to the name of his place of nativity, his early habits and education, though he recollected many isolated details of his life.

The head of the patient was usually carried by him in a peculiar dependent position, which may be best characterized by comparing it to the position of the head of a man who is endeavoring to look straight forward while some one else is endeavoring to crowd his head downward and to the left side. On being asked to straighten himself out he is able to do so, but soon relapses; at other times there appears to be a slight passive resistance to attempts to bring his head into a proper position; this, however, is readily overcome. In the winter the patient showed signs of phthisis pulmonalis; his hands exhibited peculiar movements, simulating chorea, and these movements later on extended to the nuchal region; occasionally the movements became intensified into a

veritable convulsive tremor.[1] He died in the January following the year of his admission (January 25, 1876), of his pulmonary affection, which the autopsy showed to be a catarrhal phthisis.

Post-mortem Findings.—Cranium sub-brachycephalic, a large "Os Inca," sutures normal, no asymmetry, calvarium readily removed, of normal thickness, diploë deficient. Dura normal, a slight amount of a fuscous gelatinous material of a semi-fluid consistence in the meshes of the otherwise normal arachnoid. This material was not examined microscopically. The pia was normally adherent, the vessels were normal, the veins rather full, and the puncta vasculosa of a purplish color.

On separating the hemispheres, the corpus callosum was found deficient for its anterior one-third; here a firm membrane, the pia and arachnoid, was all that separated the arachnoid spaces from a large apparently common ventricular cavity. The body of the fornix (fornices) was absent in its anterior portion, its columns were faintly indicated, the middle commissure[2] was also absent, and the existence of a slit in the septum lucidum could not be established. This portion was, however, somewhat softened, and its condition could not be accurately studied. Both lateral ventricles were enlarged, the right but slightly, the left to at least double the normal capacity; the contained fluid was clear and the choroid plexus contained numerous cysts. The endyma was firm, and contained several granulations near the thalamo-striate groove. There were adhesions on both sides between the posterior attenuated part of the fornix and the dorsal face of the thalamus; the fimbria of the hypocampa was poorly developed, and the entire hypocampa appeared dwarfed and unusually firm. The splenium of the corpus callosum was of normal thickness, the body gradually thinned down, ending with a smooth edge, about two millimeters thick. The structure was normal. The principal sulci and gyri of the convexity were of typical arrangement; both hemispheres were well convoluted. The frontal lobes appeared flattened, and their numerous gyri unusually small. On the internal face of neither hemisphere could the gyrus fornicatus be identified; the gyri were arranged in quadrate festoons, separated by sulci radiating from the ordinary site of the corpus callo-

[1] I have not incorporated in this history an observation of Dr. Kiernan's, that the patient seemed much brighter when lying on one side than when lying on the other. Certainly nothing in the *post-mortem* findings could be brought into any relation with this fact.

[2] Thalamic fusion.

sum towards the free edge of the hemisphere. The sulcus in front of the praecuneus, which would ordinarily correspond to the upward turn of the sulcus calloso marginalis, could not be traced forwards; there was nothing anomalous in the cuneus, praecuneus, or in the inferior face of the hemispheres. The condition of the inner hemispheric edge corresponding to the absent part of the corpus callosum was peculiar; the gray substance of the cortex was continued inward, and, becoming gradually attenuated, disappeared, leaving a free interval of white substance between it and the tapetum of the ventricle. This was lined by the pia, and distinct medullary strands of a moderately firm consistency extended on the latter, but did not reach the median line. The proportion of gray to white substance appeared to be normal in the convolutions themselves. After segments of the brain had been hardened a week, smooth sections showed everywhere along the inner face, and just over the attenuated gray limiting layer referred to, an area of white substance, which did not imbibe the salt, although fully exposed to its action; it remained of a dull white color, lacking the lustre of the normal white substance. Later it took the color of the solution somewhat, but remained paler and more opaque throughout.[1] The thalami were flattened and of an unusually firm texture in their deeper portion and internal faces. The pons was flat and wide, of normal texture, and the floor of the fourth ventricle showed no morbid appearance. Only the cervical portion of the cord was examined and found normal to the naked eye.

In many respects the leading features of this case resemble those of the cases collected and related by Sander.[2] The patient observed by that author was imbecile, and the entire corpus callosum of this subject was defective. Sander states that when any gyri are deficient with absence of that commissure they are symmetrically deficient on both hemispheres, and invariably appertain to the occipital lobe. There were no defective gyri in the hemispheres of R——n in that region, and the only region, whose gyri appeared

[1] The microscopic examinations failed, owing to the action of frost on the specimens.

[2] Wilhelm Sander, Ueber Balkenmangel im menschlichen Gehirn. Arch. f. Psych. i.

to indicate a defect, were those of the frontal lobes, while atypical development was limited to the anterior two-thirds of the mesal hemispheric faces. Evidently only the splenium and posterior part of the corpus callosum are in relation with the occipital lobes. There are anatomical reasons for believing the frontal lobes to be united through the genu and anterior part of the body of the great inter-hemispheral commissure, and that these parts, if any, will suffer with defects of the anterior half; with this belief, the atypy of the internal face of the frotal lobe and the smallness (?) of the frontal gyri in my own case are in harmony.

While the majority of the cases recorded in the literature were attributable to an early and fundamental defect in brain development, some like the one here related were in part at least to be accounted for on the ground of a fœtal pathological process. The father of the patient, R——n, had contracted syphilis long prior to the birth of his son; every evidence pointed to the existence of a moderate degree of hydrocephalus internus, and to a consequent pressure-atrophy of the fornix and corpus callosum, if these had been already formed, or an interference with their development while not completed. The convolutional anomalies were too profound to permit of an explanation of the appearances noted, as the result of a post-natal process. In the patient described by Chatlo,[1] the atrophy of the corpus callosum, which body was reduced to two thin and separate laminæ, was evidently due to a hydrocephalic pressure atrophy, inaugurated before birth. The patient died a year old, never recognized persons or things, and was epileptic. It is to be assumed that a similar explanation applies to the case of an epileptic in the Bicétre, cited by Foerg, the body of whose corpus callosum was absent, while the genu and splenium were present. Here

[1] *London Medical Gazette*, 1, 1845.

the fact that an anomalous gyrus occupied the place of the deficient part of the great commissure, as in my case, demonstrated the early origin of the deformity. The patient showing this anomaly was also an epileptic. The importance of the deficiency and absence of the corpus callosum in some of the insane does not consist particularly in the fact that they illustrate the function of the commissure, which is known to unite symmetrical areas of the hemispheres. The psycho-physiologist, theoretically speaking, might imagine this body absent, and not attribute a profound disturbance of the mental mechanism to its absence alone. In fact cases are related where it was absent, and yet nothing peculiar was noted in the subject of the anomaly.[1] It is rather because the absence of a commissure so constant in its development can be supposed to exist only very rarely without some deeper anomaly in the cerebral architecture, that the subject is so interesting. Evidences of such a disturbance are furnished in nearly every carefully recorded case. In that related by Potevin–Dumontel,[2] there was notable asymmetry of the hemispheres; in Foerg's case [3] defects of certain gyri were noted; in Mitchell's [4] the gyri were asymmetrical; in Sander's, judging by his figure, there were gross anomalies, particularly of the occipital lobes. Corresponding to the combination of defective with atypical developments in these brains the subjects from whom they were derived manifested, besides imbecility and lesser grades of weak-mindedness, active manifestations analogous to those found in certain primary lunatics. In

[1] It may be doubted whether any inferences can be drawn from observations of anomalies in the dissecting room, supplemented by *post-mortem* inquiries into the previous mental state of a laborer. To this objection all the recorded cases of alleged normal mental development, with deficiency of the corpus callosum, are in my opinion open.

[2] Gazette Méd. de Paris, 1863, p. 36--38.

[3] Die Bedentung des Balken im menschlichen Gehirn (cited by Sander).

[4] Medico-Chirurgical Transactions, 31, 1878.

one case related by Langdon Downe, that of a man aged forty, who could read, write and answer simple questions, but could not be taught to cipher, there was a remarkable love for music. This feature was common to the subjects presenting the cranial malformation described by Meyer (*Crania Progeneae*). Another patient described by Solly, a boy aged sixteen, in whom the corpus callosum was entirely absent, and weak-mindedness was marked, was a zealous reader. A marked feature in most of the accurately registered cases was a peculiar bluntness to external impressions. This was not noted in my case nor in others, where the posterior part of the corpus callosum was intact. Inasmuch as absence of this portion appears to be constantly associated with mal-development of the occipital lobe, it seems proper to direct attention to the posterior half of the cerebrum, as presumably an integral portion of the perception area, and a correspondingly important anatomical factor of the conceptional sphere. We know that anatomical evidences point in that direction, and, indeed, Meynert, over ten years ago, called attention to the concentration of centripetal tracts in this region of the brain, as well as to certain peculiarities in its cortical structure, susceptible of the same interpretation as the one here made.

The conventional notion of idiocy and imbecility, associating these conditions with a simply quantitative deficiency of the fore-brain is a very imperfect one. The researches of numerous observers have shown that qualitative defects, using the term "qualitative" in its wider sense to cover both morphological and histological aberrations, are at least as common and perhaps more characteristic features of the idiotic and imbecile brain. These defects may be enumerated under the following heads:

1. Atypical asymmetry of the cerebral hemispheres, as regards bulk.

2. Atypical asymmetry in the gyral development.

3. Persistence of embryonic features in the gyral arrangement.

4. Defective development of the great inter-hemispheric commissure.

5. Irregular and defective development of the great ganglia and of the conducting tracts.

6. Anomalies in the development of the minute elements of the brain.

7. Abnormal arrangement of the cerebral vascular channels.

All of these conditions are separately or in the combination of several of the features above mentioned, occasionally found in the brains of lunatics, appertaining to the group of monomania, or so-called "partial insanity."

They are also and more constantly found in that mixed and unclassified groups of cases, clinically occupying an intermediate position between the higher systemized perversions of the mind, falling under the designation of monomania and the lower group of congenital imbecility. Inasmuch as the latter cases almost universally exhibited a pronounced malformation of the cranium, and in all the cases which have been thoroughly examined, with the result of revealing cerebral defects, such malformation was a prominent feature; it may not be unwarrantable to anticipate the existence of cerebral defects, where similar external malformations are discovered during life.

There are undoubtedly cases of monomania in which cerebral defects are not discoverable. Instead of conflicting with the views to be expressed in the present chapter, this fact furnishes on the contrary a strong support of them. What is more natural than that in a series of cases, ranging between idiocy with its gross and palpable physiological defects, and monomania with its relatively close analogies to physiologi-

cal cerebration, a corresponding structural gradation, insensibly approaching the normal limits, should exist? The general conclusion that the explanation of the existence of a certain class of the hereditary insanities, and the basis of the manifested symptoms is to be sought for in morphological, that is, in *quasi* teratological faults of structure and not in post-natal changes, happens to harmonize with every clinical experience with this class of cases. I may briefly refer to the readiness with which any one form of this series undergoes a metamorphosis into another in the course of hereditary transmission, a fact which does not seem interpretable in any other light than in the one of a transmission of structural defects, either intensified or mitigated [1] in the course of such transmission. In the sequel, I trust to show, also, that in a clinical as well as in the narrowest psychological sense, there is nothing contradictory in the association of the different forms of mental alienation with the same kind of defects; the very variation in their degree and distribution constitutes the strongest plea for the establishing of such an association with insanities varying in the intensity and direction of their symptoms.

That the transmission of many of the cerebral defects, with which we are here concerned, occurs in some way at the moment of conception, although the exact manner of the transmission will never become known, is the universal opinion of those who have studied the subject.[2] Far more satisfac-

[1] The erroneous idea has been inculcated in several recent text-books, that as soon as the degenerative psychoses have once manifested themselves in a given family line, the course of that line is infallibly towards extinction or further degeneration. This, while true in a vast majority of cases, is not so with regard to others. For example, the Austrian philosopher, Schopenhauer, had imbecile relatives in his ancestry. The appearance of a one-sided talent or genius in a mentally unsound family illustrates the occasional triumph of the conservative and progressive over the degenerative tendencies.

[2] It may be generally unsafe to venture prophesying as to the advances to be made or not to be made in any branch of human knowledge; in the present instance, however a prophesy may be risked. When it is borne in mind that the

tory is our knowledge concerning the embryonic mechanism of these defects, and of the influence which fœtal and maternal impressions and injuries exert on the development of the nerve centres; the latter knowledge furnishes valuable arguments by analogy in support of our conclusions regarding the hereditary group. Modern embryologists have gone so far as to imitate the known natural teratological malformation of the nerve centres by artificial methods.[1] By wounding the embryonic and vascular areas of the chick's germ with a cataract needle, malformations are induced, varying in intensity and character with the earliness of the injury, and its precise extent. More delicate injuries produce less monstrous development, and it is particularly the partial varnishing or irregular heating of the egg shell that result in the production of anomalies comparable to microcephaly and cerebral asymmetry. It is this latter fact, showing the constancy of the injurious effect of so apparently slight an impression, as the partial varnishing of a structure not directly connected with the embryo, that may suggest the line of research, or rather of reasoning, to be followed in seeking for a plausible explanation of the maternal and other impressions acting on the germ. What delicate problems are to be solved in

transmission of paternal qualities must take place through a single spermatozoön or, according to others, through a few such, and that with our use of the highest powers of the microscope, only one doubtful observation (Eimer's axial thread) is on record, which even hints why the human progeny remains faithful to as fundamental a feature as the vertebrate type of its ancestry, the impossibility of tracing a hundred-fold more subtle characters in the media of parental transmission must seem evident to the most sang uine speculator.

[1] Réaumur: Art de faire éclore et d'élever en toute saison des oiseaux domestiques de toutes espèces, Paris, 1849. Dareste: Production des monstrosités, Paris, 1877, Gazette Mèdicale, 1856. Panum: Untersuchungen über die Entstehung der Missbildungen, Berlin, 1870. Schrohe: Untersuchungen uber den Einfluss mechanischer Verletzungen auf die Entwicklung des Embryo im Hühnerei. Hunking: Oester. Jahrb. f. Paediatrik, 1876. Marion Humes: Beitraege zur Lehre der Exencephalie. Ibidem, II. Symkiewiez: Sitzungsbericht der K. Akad der Wissenschaft, LXXII., 3. [The latter researches were made at the laboratory of Prof. Schenk, and the experiments witnessed by myself.]

this connection may be inferred from the observation of Dareste, that eggs transported in railroad cars, and subjected to the vibration and repeated shocks of a railroad journey are checked in development for several days. It requires no great stretch of the fancy to imagine a less coarse, molecular transmission to take place during the maturation of the ovum, or its ›tilization, or, finally, the embryonic stages of the more complex and, therefore, more readily disturbed and distorted human germ, and thus to account for the disastrous effects of insanity, emotional explosions, and mental or physical shocks of either parent, on the offspring.

All doubts as to the potency of maternal impressions to affect the shape of the fœtal body and its organs must be dispelled by such positive evidence as is furnished by the two following cases, one selected from the domain of zoölogy, the other from that of an alienist's experience. At the meeting of the Zoölogical Society of London, held February 24, 1863, Dr. C. E. Gray,[1] of the British Museum, presented the body of a chicken whose beak and feet closely resembled those of a parrot. The sender of the specimen reported that several such instances had occurred in his poultry yard, and he attributed the monstrosities to the fact that one of the hens had been frightened by a parrot which was kept in a cage in the same yard, and which had the habit, when the hens approached its cage for food, of screeching violently at them. More remarkable in many respects is the case described by L. Wille, of Basel.[2] A healthy woman, while pregnant by a healthy husband, experienced a sudden fright at seeing a man without a nose. When her child was born, its nose was found flattened, there was harelip, and, besides other evidences of an early defect in the germ axis epiblast, the cerebral hemispheres

[1] Proceedings for 1863, Part I.
[2] Archiv. f. Psychiatrie. x.

were found confluent in the middle line. I have now under treatment a child, which I first saw when it was nineteen months old, and which seems to me to be a forcible example of the influence of maternal visual impressions on the conformation of the child. Its head was noticed from birth to have the following peculiarity: the frontal region being excessively narrow, the greater part of the skull cavity seemed to be crowded behind the ears. The narrowing of the frontal region was unsymmetrical, the left frontal bone appearing as if not half the area of its fellow, and exhibiting a depression extending into the left temporal region, while the ocular aperture on that side was less wide than its fellow. Before my assuming charge of the case it had had for three months from ten to thirty epileptiform attacks daily, which ceased after five days, under the use of bromides and proper dietetic treatment. The child was then absolutely idiotic; it was at last accounts weak-minded, and altogether an "enfant arriere," had not learned to walk at its twenty-second month, and exhibited violent outbursts of temper at times. Owing to strabismus (deficiency of inner and inferior *recti*), it did not seem, when I first saw it, to use its eyes at all. At present it manages to render its ocular axes parallel by carrying its head in an oblique position towards the object it desires to fixate. The only cause the healthy mother is able to assign, is a sudden fright experienced by her during a panic on board a steamer, a few weeks before the infant was born. But as the deformity in question must have originated at a much earlier period of gestation, and as the whole physiognomy of the child is an almost caricature-like reproduction of one of its father's features, I am inclined to attribute the deformity to a visual impression. The father sustained an injury of the left eye, years ago, and the palpebral aperture being closed, the whole side appears contracted, though in

reality there is no cranial asymmetry in his case. In all these and similar cases the embryonic disturbance extends far deeper than the deformity of the subject seen by the mother—an evidence that the injurious influence has partially revolutionized the germ-layer arrangements and proportions. A striking example of the influence of maternal conditions of another kind is furnished by Herbert Sankey[1] where, in a somewhat neurotic family, all the children were normal except two, with whom the mother had had severe epileptiform convulsions while *enceinte*.

I have not considered it necessary in this essay to refer to the relative preponderance of maternal influence in hereditary transmission, as the existence of such a preponderance is almost a dogma of Natural History. Maternal influences being concerned in the maturation of the ovum, a process lasting many years, and the development of the impregnated ovum being also under the rule of the female nervous system, it is easily seen why a healthy male influence, limited to a brief period of the germ-history, is less potent to neutralize the evil influence of a vitiated female parentage, than a healthy maternal influence is to neutralize the influence of a morbid or aberrant male ancestry. This finds its expression in the conclusions of Richarz.[2]

1. The chances of the transmission of insanity are greater if the mother is affected, than if the father is insane.

2. The chances of transmission are greater for that child which is of the same sex, and which resembles the insane person.

Richarz was able after a careful study of numerous cases to establish the following order of liability to insane inheritance: [3]

[1] Brain, October, 1878, p. 391.

[2] Allg. Zeitschrift. f. Psychiatrie, Bd. 30.

[3] Cullen and Burrows observed the more facile transmission to those children resembling the insane parent much earlier than Richarz.

Mother insane.	1. The daughter resembling the mother (?)
"	2. The son resembling the mother.
"	3. The daughter resembling the father.
"	4. The son resembling the father.
Father insane.	5. The son resembling the father.
"	6. The daughter resembling the father.
"	7. The daughter resembling the mother (?)
"	8. The son resembling the mother (?)

For the majority of cases of cerebral deformity, the cause of the deformity must be considered to exist in the germ, prior to the appearance of the separate organs of the body. The artificial deformities referred to produce analogous results, because they imitate original germ defects, either by mechanical removal or by some other interference with a special part of the germ. It is an evidence of the early involvement of the germ, that the somatic malformation in the hereditary forms of insanity often affects other parts of the body than the nervous axis; indeed the stigmata of heredity, defective development of the uro-genital system, deformities in the facial skull, irregular growth of the teeth, and misshapen ears and limbs,—owe their grave significance to this fact. Like the deformities of the brain and skull, these anomalies are also most marked and constant with the lower forms of the hereditary group, such as idiocy and imbecility, and less constant and less marked with the connecting links uniting these forms to the hereditarily based systemized perversions of the mind, with which latter they are still rarer, and when present, least intense.

I cannot agree with those who seek for the source of the arrested and perverted brain development, in the reaction of an abnormally growing and ossifying skull on the skull contents. The premature ossification theory is being abandoned even for the microcephali; it is to be doubted if it has any general application in view of the open character of

the sutures in one of Vogt's cases. Taking merely the well-studied cases of asymmetry, the variability of a single factor shows that we should be cautious in referring cerebral anomalies to any single influence. In Muhr's case, for example, the atrophic cerebellar hemisphere was on the same side with the atrophic cerebral hemisphere. The internal carotid artery of that side was of lesser calibre and the entire skull-half shortened. Here the lagging behind in growth of one skull-half appears on first sight to explain the retarded development of the corresponding halves of the cerebrum and cerebellum. In view of the atypy of the gyri however, an atypy not to be accounted for purely on mechanical grounds, it is more reasonable to suppose that the imperfect development of certain vascular channels was either a concomitant or secondary to a primitive anomaly of the cerebral hemisphere. The retarded skull growth would then have to be looked upon as a tertiary occurrence, and the cerebellar defect as a final ensuing result. It is even a question, whether the apparently defective half of the skull is always on the same side as the defective hemisphere. In Redemeir's case this relation was reversed, and it is difficult to understand the anatomical condition of Emmerich Schw———, a nephew of Muhr's patient, in whom the cranial atrophy, and the defects in innervation, were on the same side, unless we assume that here also the defective cerebral hemisphere corresponded to the apparently better developed half of the cranium. It is, when the cranial defect and the defects in innervation are on opposite sides, that we can safely assume, as the writer did in the case of Guiteau, which hemisphere is least developed. Regarding other associated anomalies, we know that ordinarily, with defective development of one cerebral hemisphere, the cerebellar defect is on the opposite side (case McA—fe), herein following the course of the anatomical connections,

of tract development, and of the secondary degenerations. In Muhr's case, the deviation from this rule was due to the entering of the abnormal skull shape, itself secondary to other defects, as an element influencing brain growth at a special period of development.[1] An abnormal shape of the skull, generally associated with a cerebral defect, and hence valuable as a physical sign, presumably indicating mental anomalies, may exert an important modifying influence at a late period on the contained brain; but the grosser defects in the cerebral architecture must ante-date the period of skull growth, and be deeply implanted as an original intrinsic fault in the brain blastema itself. The researches of His[2] have shown how important for the definitive shape of the body and its organs, the position of individual cells, the proportion of the germ area, the convexity and length of germ-curves, and the relative rate of growth of different germ areas are. And as the experiments of other embryologists have established the possibility of producing monstrosities analogous to those interesting us here, by altering those conditions ever so slightly, we may rest satisfied with the general conclusion that the fundamental error of development at the root of the malformations associated with the hereditary and degenerative forms of insanity is to be located at a very early period of embryonic or possibly of ovuline life. Certain of these anomalies are due to a disturbance of the balance between the growth of the epiblast and mesoblast derivatives of the brain, others to a disharmony in the development of related and associated brain segments, in the severer cases both elements are combined;[3] these have, however, but a collateral interest.

[1] The cerebellum is relatively slower in attaining its full growth than the cerebral hemispheres.

[2] His, Unsere Koerperform. That this distinguished observer went to extremes with his mechanical theory, should not be passed by here without mention.

[3] Rohon: Untersuchungen ueber den Bau eines Mikrocephalen Hirnes, Wien, 1878.

It is not difficult to perceive the relation existing between a defective brain weight, paucity of the gyri, deficiency of properly developed cortical cells, and such an elementary form of mental aberration as simple imbecility. The subject of the relation between structure and function, gains in interest when we leave the domain of simple mental weakness, and analyze the relation between structural defects and the positive symptoms of insanity, that is, moral perversion, mental obliquity, delusions and morbid impulses, which stand forth as among the most characteristic and pronounced evidences of the hereditary insanities.

Such symptoms are not limited to the higher forms of the degenerative series; they occur less constantly and less marked also in the lower forms.[1] The murderous impulse of Redemeir, the sexual perversion of Lombroso's and Gock's patients, the moral depravation of Lemaire and Gabites; the morbid revengefulness and the malicious impulses manifested in Girrotto's, Stahl's and Santlus' cases, are illustrations of the association with imbecility of positive manifestations of those derangements which are apt to bring the subject in conflict with the law.

Lombroso's[2] patient strangulated several women, mutilated them and drank their blood. His skull was unsymmetrical; the right frontal region reduced; there was a strong hereditary taint, no trace of moral sense or of the normal sexual desire. Gock[3] describes an imbecile female whose sexual inclinations were towards the same sex; her mother

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[1] Without formally expressing the relation which I have attempted to establish in this chapter, authors have recognized the difficulty of demarcating the lower and higher forms of hereditary mental alienation from each other and from intermediate groups. Crichton Browne in describing subjects standing half-way between the "insane and the idiotic on the one hand and the neurotic class on the other," evidently grasped the relationship existing between these forms.

[2] Krafft-Ebing's Ubersicht, p. 43.

[3] Archiv fuer Psychiatrie, v.

was an imbecile. Lemaire, according to Delasiauve,[1] had convulsions as a child, club-foot and strabismus dating from the time of the convulsions; as a child he displayed perverse tendencies, and murdered his mother-in-law, *in spe*, from special motives. The plea of insanity was offered, but Lemaire was executed, and the *post-mortem* revealed congenital atrophy of the frontal bone, and other deformities of the cranium, as well as organic lesions referred by Delasiauve to the meningitic process, occurring in Lemaire's infancy. Kitching[2] describes the case of Gabites who was an apprentice, aged 16, and who had murdered a younger colleague in a most brutal manner with the aid of a hammer and a knife; he confessed the murder, which he claimed to have committed in revenge. Between his first and third year he had suffered from convulsions, and remained deaf and imbecile thereafter. A physical examination revealed considerable facial and cranial asymmetry.

He had committed the murder from the feeblest of motives, if any; went to the court himself, confessed the crime and was convicted because he spoke "rationally." Girrotto and Tibaldi[3] describe a patient who committed arson for "revenge;" he was micro-brachycephalic, imbecile, his genitals were imperfectly developed. The parents suffered from pellagrous insanity. Stahl's similar case,[4] was a brachycephalic idiotic subject, who destroyed trees, maliciously committed arson, and made violent attacks on persons. The one described by Santlus was a deaf mute, of a low grade of mental development, who had been repeatedly punished for rape, arson and theft. In the case of Munzberger, indicted for murder in the first degree before the Court of Oyer and Terminer, in the county of New

[1] Journal de Médicine Mentale, 1867.
[2] *Journal of Mental Science*, 1867.
[3] Krafft-Ebings's Ubersicht, p. 28.
[4] Irrenfreund, 1871.

York, the writer was called on as medical witness by the defendant's attorneys, and found the accused an imbecile, presenting the peculiar expression of what an English writer terms "Kalmuck idiocy," the skull was deformed and extremely brachycephalic. His crime was, as far as its provocation was concerned, very much like that described in Kitching's case, its manner of execution like that followed by Redemeir. An enlightened judge recognized the prisoner's imbecility after the testimony had reached the climax of bringing the prisoner's brother on the stand, who presented still more striking physical evidences of the same condition exhibited by his brother, and the impromptu elicitation by the District Attorney from the brother's wife of the fact that she considered her husband—that is, the prisoner's brother—" not right in his mind." One sister of the prisoner died in the State Asylum at Utica.

Other examples, of more recent occurrence and equally important to the psychologist, if less important to the forensic physician, demonstrate the presence in the imbecile group of delusional and imperative conceptions, as well as of insane projects and of morbid egotism, analogous to the more elaborate and systemized aberrations of the intellectual monomaniac. Even with idiots who have not acquired language, oddities of behavior are observed, which cannot be ranked as negative symptoms. This is clearly the case with a microcephalus described by Jensen.[1] Fuerst describes a female imbecile, imitating the type of querulent monomania.[2] Kohler[3] remarks the existence of a certain class of defective children, sent to idiot asylums, who should more properly be designated as lunatics, and are, therefore, rather subjects for the alienist than the pedagogue. One

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[1] Archiv. fuer Psychiatrie, x.

[2] Baierische Artzliches Correspondenzblatt, 1873, Nh. 31.

[3] "Ueber Kindliches Irrsein," Irrenfreund, 1878, No. 11.

of his patients, a boy of twelve, would listen at the door, as if the subject of a hallucination, then suddenly dart through the room and tie himself with a handkerchief, thread or anything else he could find, to a chair. Another exhibited the type of micromania to perfection. Analogous observations have been made by Ireland. Emminghaus[1] refers to an older observation by Greding of a child born with destructive tendencies, and dying with them before reaching the second year. Verdelli gives the cranial measurements of a cretin, whose speech was imperfect, who was imbecile, and had delusions of grandeur; here cranial asymmetry was pronounced.[2]

It seems that of the earlier American psychologists a few recognized at least, in part, the profound bond of union connecting the systemized insanities, the *folie sans délire* of Pinel, the *manie or folie raissonante* of other authors with imbecility, for in some now antiquated asylum reports and papers, cases corresponding to these insanities [3] are ranked as "imbecility of the first grade." The weakness of judgment displayed by these lunatics in such marked contrast with the ability possessed by them in other directions, is really equivalent to a partial imbecility. Now, as genuine relatively complete imbecility is dependent upon a general deficiency in brain development, these systemized insanities and other congenital and hereditary insanities, involving only a part of the mental sphere, may be consistently referred to partial defects of development, in view of the teratological findings of Stark, Muhr, Verdelli, myself and others.

The fundamental factors of thought and action are our perceptions and motor innervations; these are, in other words, the units of thought and action. They can be prop-

[1] Allgemeine Psychopathologie.

[2] Rivista Clinica, 1874.

[3] Clinically described in my article on Monomania or "Primäre Verrücktheit," *St. Louis Clinical Record*, December, 1880.

erly referred to nerve-cell groups, as their anatomical seat, and as far as the intellect is in question, to the cell groups represented in the more or less diffused and dovetailing areas of specialized function [1] in the cortex cerebri. But the largest hemisphere known, with the most crowded and most highly developed nerve-cells, the most extensive connections with the periphery, and the most perfect projection of that periphery in its intricately convoluted mass, would, func-

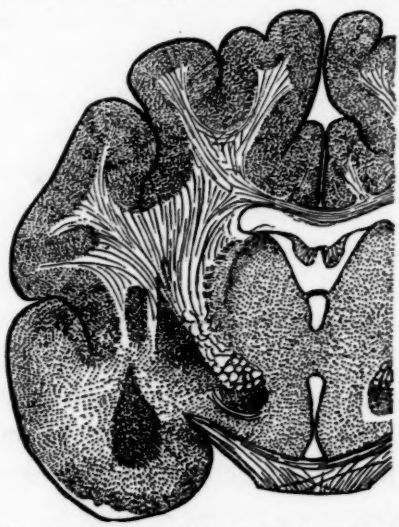

FIG. 7.—Transverse (frontal) section of cat's encephalon at the level of the chiasm.

tionally speaking, contain nothing beyond a series of pigeonholed impressions, stored away without method and with little useful purpose to the organism, were it not for an apparatus whose study is much neglected by anatomists as well as physiologists. I refer to those arched fibres uniting the different cortical centres with each other, and to which Meynert, Broadbent, Wundt and Stark alone have directed attention as the presumable media of the highest function of the mind.

[1] The most correct outlines of these is furnished in Exner's work; those not possessing the original will find a full abstract, with illustrations, in the *American Journal of Neurology and Psychiatry*, for February, 1882.

These fibres constitute by far the greater part of the "centrum ovale" of the hemispheres. The total transverse section of the crus and the fibre masses from the thalamus and basilar ganglia would not comprise more than one-third of its entire mass. In the lower animals this relation is different. The "projecting" fibres, such as those of the crus and capsule and the great ganglia, are in truth not as massive as in man, but they are nearly equal to, and in still lower forms exceed, those connecting the gyri with each other. Hence, the chief point of contrast noted on examining a transverse (frontal) section through the cerebral hemispheres of a man and an ape consists in the mass of the centrum ovale of Vieussens. The white substance in man actually appears hypertrophied when compared with that of lower animals, because of the luxuriant growth of those associating fibres which mainly mediate the complex coördination of the separate units of thought and action, and which constitute the anatomical basis of the highest mental functions. (Figs. 7, 8 and 9.) The study of the human mind does not resolve itself into an analysis of individual faculties, such as simple perceptions and motor innervations, but, above all, requires the establishmentof their synthesis into the complex abstractions on which the *ego* of metaphysicians depends. [1]

[1] There is a remarkable parallelism between the development of nerve-strands in the animal series and the order in which the various strands obtain their myelin in the fœtus and new-born child. In the carnivora the three (four?) articuli of the lenticular nucleus cannot be differentiated, only the outer articulus or putamen is separated from an undifferentiated inner mass by a white lamina. The claustrum is very thick and is neither separated from the cortex nor the lenticular nucleus in its lower half. In fact the cortex, the lenticular nucleus and the claustrum with the nucleus amygdalæ, constitute a common gray mass. In the ape the separation is more perfect, and in the adult human brain reaches its greatest distinctness, after presenting relations in fœta reminding one of those found in the carnivora. It is precisely here where a disturbance in the development of the nerve-strands should be carefully sought for, this being one of the regions where late disturbances in development might manifest themselves. It is a curious observation that the development of the white intersec-

Neither anatomical nor physiological researches are calculated to demonstrate just what associating fasciculi, or what groups of such fasciculi are subservient to any particular coördination. Where, for example, the cortical area for vision overlaps that of the centre for arm and hand, we are permit-

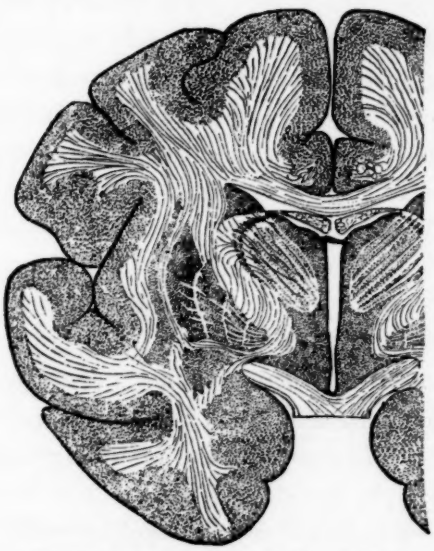

FIG. 8.—Transverse (frontal) section of encephalon of baboon (Cynocephalus Chacena) at same level as Fig. 7.

ted to infer that the associating fasciculus underlying the "debatable land," is subservient to the coördinations employed in writing and drawing. In like manner a similar associating band extending from the field of the auditory word symbols to the tongue and lip centres may be as justly

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tions of the lenticular nucleus does not occur simultaneously over the whole extent of that ganglion, but is already completed in its posterior third, while the anterior parts are but feebly differentiated. It is for this reason that the posterior end of the lenticular nucleus in the carnivora greatly resembles the corresponding part in man, while there is a great difference between the anterior parts of the same ganglia in the two cases. In the human adult even the frontal end of the nucleus is not sharply differentiated into gray and white layers as the rest of the ganglion. It may be also borne in mind that the "associating-systems," that is, the "fibrae arcuatae," are the latest to show the medullary white colors, according to Flechsig.

considered the chief mediator of the speech coördinations. But beyond such simple combinations we are not in a position to-day to make even tentative assertions.

To explain myself better, permit me to take a hypothetical case: A child originally has no adequate notion of distance or perspective; it will in the first weeks of life grasp at objects fifty feet away, or, as Meynert often stated in illustrating this subject in his lectures, undertake to blow out the moon as readily as a candle. Its first idea of space is gathered from its own cutaneous sensations. It learns to distinguish between those impressions which are single, when touching foreign objects, and associated double ones,

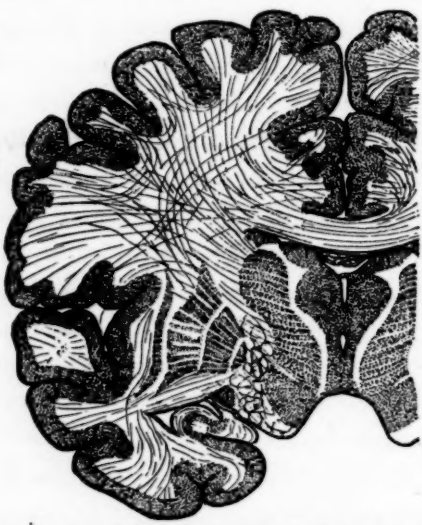

FIG. 9.—Transverse (frontal) section of human encephalon, slightly posterior to the level of Figs. 7 and 8.

as when it touches a part of its own body. In course of time[1] it has learned thus to separate the idea of its own body from the confused chaos which all impressions originally constitute to the infant. It next learns the lesson that to

[1] In great part this is accomplished, at least in active infants, during the last months of utero-gestation.

reach certain objects it must crawl or walk a certain distance, while other objects are more immediately within reach, and soon discovers that a discrimination is possible by the eye, inasmuch as intervening objects, which it has learned to measure by its own body or body movements as a gauge, permit an approximate judgment of distance, while other experiments, in the shape of time impressions, come to its aid by showing that to go so far, requires such and such a period of time, to go so much further requires so much a greater period. We see here that the crude idea of space possessed at this stage must involve cortical areas, devoted to motion and general sensation, and situated in the Rolandic region; those devoted to visual impressions situated in the occipital region, and those devoted to time, which, as I shall point out, are probably to be located in the frontal lobes. Were we to go further, and to analyze the more elaborate sense of space possessed by the adult, involving the play of the equilibrium, and the appreciation of movement and direction in foreign objects, we should find our attempt to trace out even the basis of the single conception of space a failure, owing to the fact that cortical areas situated in nearly every part of the hemispheres must be inferred to be subsidiary to it, and to be connected by fibre tracts of different lengths and courses.

If this is the case with a single and one of the simpler mental coördinations, what shall we anticipate of attempts to locate such vastly more complicated mental states as the disturbed sense of right and wrong, of egotism, of delusion and of morbid projects? Must we not, in accordance with what we do know of the functional role of associating fibres and the findings in the case of certain hereditary and congenital cases of insanity, content ourselves with the assertion that it is the mal-connection of cortical centres which is at the root of the perversions exhibited in them? Is not

the deficiency of the corpus callosum in some of them but an expression of a general defect of associating tracts, the convolutional aberration noted in others but an expression of an imperfect development of the end stations of such fibre systems, and the heterotopia of gray substance observed in a third group but an evidence of a profound disturbance in the maturation of the intra-hemispheral conducting paths? The almost exclusive occurrence of these anomalies in the insane, their nearly constant connection with congenital or transmitted taint, and their not infrequent combination in the same subject are facts supporting this view.

There are a number of observations made, partly within the walls of asylums, partly by the neurologist outside of them, which require to be collated, and when collated will doubtless yield a rich harvest of sound conclusions bearing on this subject. It is to be presumed that if faults in the cortical and medullary architecture may be held responsible for those higher systemized perversions characteristic of monomania, as well as of the defects which constitute imbecility, that other disturbances of functions more positively located in the cortex and its subsidiary tracts, must be accounted for on a similar theory. What less than a confirmatory answer to this presumption is it, that many original monomaniacs and imbeciles learn to speak and to talk later in life than healthy children, that certain speech co-ordinations remain difficult or impossible for a considerable period in others, that convulsions and peripheral atrophies are not rare with them, that imperative movements bearing every analogy to the imperative conception and impulse, and delusions regarding space bearing great similitude to the ordinary insane delusion, are not uncommon with persons suffering from the hereditary taint; and finally, that abnormal visceral and tactile sensations are among the most common phenomena with such subjects? Nay, what we may call a

more strictly psychical delusion is often welded with a *quasi* somatic illusion in such a manner that the two appear inseparable. Can the case of an insane clergyman, who complained of a second person reciting his sermons, always from the same spot in the floor, two feet obliquely outward from his right leg, be accounted for on any other ground than that a fixed idea of space had become woven into his fixed delusion; in other words, that a falsification of his space sense had become identified with a perversion of his sense of identity? Symptoms analogous to agoraphobia, claustrophobia and mysophobia, common with the chronic insane, are illustrations of the frequency of similar associations of morbid tactile and space abstractions, with the traditional manifestations of insanity. But there are still other considerations sustaining the view here announced:

While the general belief associates all mental disturbances with perversion of the functions of the cerebral hemispheres, and it would be a truism to insist on this belief as a correct one, sufficient stress is not laid by modern writers on the fact that the converse, pathologically speaking, is not of universal applicability, namely, that only hemispheric lesions are essential accompaniments of the mental symptoms evinced during life. It is an old observation, but it has not been sufficiently commented on, that lesions of the pons, the crura and thalami are often accompanied by obliteration more or less complete of consciousness, blurring of the perceptions, confusion in the intellectual sphere, and this in cases where the lesion is not one of such a character as to disturb neighboring ganglia by pressure. Two explanations may be offered for this phenomenon. Either the vaso-motor centre for the cortical vessels must be assumed to be under the partial control of isthmus ganglia, and hence, that isthmus lesions may by irritation or destruction of this centre excite or paralyze the vascular tubes of certain

cortical districts, or it must be concluded that the pathological interruption of the great nerve tracts involves a functional disturbance of cortical end stations. The former explanation would seem rather applicable to cases in which general and widespread mental disturbance, somnolence, excitement or depression are found, as well as to those cases where epileptic symptoms are associated with a constitutional insanity, the latter to those where the disturbances are partial in character.

It is a well-known fact that if all the avenues of sensory perception are closed, unconsciousness in the way of sleep speedily follows. May not the interruption of the perception tracts be followed by corresponding phenomena of a less extensive nature, when due to defects in the isthmus territory? That an irritative lesion in the line of the centripetal tracts can influence cortical life, is amply illustrated by cases of thalamus lesion with which hallucinations are sometimes present. Here the cause of the hallucination is in a lower centre, but from all we can infer, the belief is justified that the entry of the hallucination into the intellectual sphere can only take place in the cortical termination of that tract, for only at this point, through the conducting and associating tracts, can it become a source of disturbance to the patient's *ego*. The study of the pathology of the great nerve tracts has been limited of late almost exclusively to the middle and posterior thirds of the internal capsule. It seems to have been forgotten that Meynert traced an enormous division of the crus directly to the frontal lobe and the lenticular nucleus, and that this portion, through the transverse fibres of the pons, is connected with the cerebellum, and that far other functions are to be located in the cortex than merely muscular innervation and visual and auditory perceptions, to whose study modern localizationists are directing their attention so exclusively. The restiform columns derived from spinal fibres enter the cerebellum and

terminate chiefly in its hemispheres; the cortex of these hemispheres is connected by radiatory fibres with the dentated nucleus, which is a recipient of fibres of the auditory nerve; in short, the cortex of the cerebellar hemisphere receives fibres both from the sensorial periphery of the body and the semi-circular canals. From this reception area the transverse fibres of the pons originate, and enter the crus; it is these which, according to Flechsig's most recent researches, run to the frontal lobe and lenticular nucleus. In no respect does man so much differ from the ape as in the quantitative development of these fasciculi. Their development is intimately associated with the mass of the frontal lobe, and there is every reason for considering them the channels of information of the equilibrium, and possibly of the senses of space and time, on which the scope of the mind is so closely dependent. It is not at all improbable that lesions in these tracts may disturb these sensations, and that the entire mental architecture may totter with the withdrawal or weakening of so important pillars. Possibly the congenital asymmetry of the peduncular tracts observed in certain cases of mental perversion may not be without a bearing in the explanation of the symptoms of those cases, and this explanation would be adjunct to the theory of mal-development of the associating tracts here advanced in explanation of other symptoms of these same states. The day will come when physiologists will not attempt to determine the seat of the higher functions in single centres by special and localized experimentation, but seek rather to correlate the results of different sets of experiments, which, viewed in their aggregate, can justify but one conclusion—a logical truism—that the complex function known as mind can exist only on a very complex anatomical substratum. From this point of view nothing could be more absurd than to speak of "intellect cells"

(Denkzellen) as situated in the cerebral cortex, for simple elements can have but simple functions. We have "intellect cell combinations," but not intellect cells; nothing in the cell *per se* justifies us in considering a cortical element as any higher a physiological organism than a multipolar cell of the anterior spinal cornua. It is the combination of the cortical cell with myriads of other similar cells, the aggregate having a centro-terminal position, and directly or indirectly reflecting the co-ordinated activity of the lower centres, that gives the cortical cell its supreme psychical role; but that role is, intrinsically, merely that of an individual in the governing cell colony of the nervous system, whose members would be capable of at best a chaotic activity were it not for the existence of proximate and distant associating conduits, which render it possible for the simplest impression to be brought into relation with that great multitude of co-ordinated innervations and registrations constituting the *ego*.

The *ego* presents us with the problem of an inseparable compound unit. It has its segments, but none of these can be considered abstracted without injury or ruin to that psychical arch, in which every portion is equivalent to a keystone. If we analyze those segments, we shall find that they correspond to the reception areas of specialized impressions, whose terminal entry into the psychical sphere is marked by the development of abstractions based on the correlation of two or more of these impression categories. In other words, the impressions conveyed by the special sense tracts are the pedestals on which such abstract ideas as those of harmony, of space, of rhythm, of beauty, of strength or of pleasure are supported. How these abstractions in their turn serve as the foundations of still higher mental combinations has been shown by our best psychological writers, and needs but bare mention here. In the light

of these reflections, a disturbance of the balance of impressions created by a defective or unduly preponderating development of the lower nerve tracts of the isthmus must be assumed to exert a grave influence on mental development. It is true that the asymmetry of the peduncular tracts observed in certain hereditary lunatics is in part secondary to mal-development of higher centres; but this is not always the case. The asymmetry of the peduncular tracts does not necessarily follow the laws of tract development; it is occasionally noted to be quite contrary to these.

I have observed that great variations from the ordinary proportions existing between the weight of the isthmus and cerebrum, are found in subjects noted for an original enfeeblement of will-power. Here the medulla, pons and crura are generally smaller, and the base of the cranium narrow. The basal view of such a brain presents quite a contrast to that of the brain of a subject with a broad cranial base, powerful foramina for nerve exit, with a vigorous "animal" frame (as it is frequently miscalled), and, in short, all the inter-dependent evidences of vigorous nervous and peripheral development. Here the pons is high and globose, the crura are strongly prominent and the oblongata is chiseled in bold relief.[1]

In the subjects of the deformity described by Meyer, in his paper on the *Crania Progenaea*,[2] with which deformity the base of the skull, as indicated in the palatine deformity, is very narrow, a marked development of the musical sense, or at least a fondness for music, was noted, co-existing with general mental weakness. On the other hand, I have observed in several subjects with what may be styled the op-

[1] Except where the ordinary prominences are concealed by a luxuriant development of arciform fibres, not uncommon in the same subjects.

[2] *Crania progenia* is the more correct term, according to Iszlai, Trans. Inter. Med. Congress of 1881, Dental Section, vol. iii.

posite cranial extreme, namely, the stenotic skull, an absence of all sense of harmony and an indifference to music.[1] Here the base of the skull is wide, wider even than in the normal cranium, but shortened considerably. The observations are still too few to admit of more than the provisional and tentative mention of so notable a contrast in subjects with a great difference in the cranial proportions; but it is certainly singular, and seems to be more than a mere coincidence, that with a narrowed cranial base, one of the higher sense apperceptions should be remarkably developed, while with the opposite condition it should be absent. If this observation is confirmed, it may, following out the line of argument just laid down, furnish the key to the solution of some apparently paradoxical problems of mental science, related to the general subject treated of in this chapter, and by analogy account for the "electrical" and disturbed space sensations of certain hereditary lunatics and sufferers from monomania. That many of the peculiar sensations of these insane are to be attributed not to disturbances in the periphery, but to

[1] In one of these cases the "criminal imbecile," B——s, who, I may say in passing, shammed a form of insanity with religious exaltation to escape from the penitentiary, unaware of the existence of his original psychosis, the striae acustici were absent, the ventricular floor was very wide. During life there had been observed a complete absence of musical sense, and complete indifference to music, the moral sense was absent and weak-mindedness pronounced. I found the striae absent in another lunatic, H———n, an inmate of the Mendota asylum, in whom the ventricular floor was also very wide; the patient was a masturbatory lunatic. A small gummy tumor was found on the dura. Unfortunately, no observation as to his musical sense had been made. Dr. De Hart, to whom I owed the specimen, states that an uncle of the patient was eccentric. These are the only instances, in an experience of over a hundred examinations of sane and over forty of insane brains, in which I found the striae absent in the adult. It is well known that there is great individual variation in this respect, and that the presence of white striae is distinctive of the human adult brain. It may be imagined that the greater the width of the ventricular floor the greater is the resistance to the development of the striae. Thus far sufficient notes of the life history of persons showing the extremes of this variation are not available, and the coincidence observed by myself is here related, to direct attention to what promises to become an important subject of inquiry with "mutual autopsy societies" and kindred bodies.

some essentially central condition, is illustrated by a case related by Fritsch[1] of a female monomaniac [2] who had abnormal sexual ideas and sensations, although she had neither ovaries nor a uterus, her vagina ending in a cul-de-sac.[3]

While the development of systemized delusions, of morbid projects and imperative conceptions is not altogether independent of the surroundings and circumstances of the subject of these symptoms of insanity, and it would involve a gross misrecognition of their true nature to ignore the modifying influence of extrinsic factors, the general sameness of symptoms in a large group of monomaniacs is a striking illustration of the fact that even abnormal cerebral development follows definite laws. It is this conclusion which justifies us in supposing that if in the cases where these symptoms are observed in persons devoid of an inherited taint, we could exclude the existence of an autochthonous cerebral anomaly—which we cannot—we would be compelled to assume that those elements in the cerebral mechanism, which are latest to develop, are functionally the weakest in their resisting power to acquired or pathological taint.

It must be admitted that the theory here advanced is insusceptible of actual demonstration in the greater number of cases to which it is intended to relate. It is supported by a few well-established observations, and resting on these, extends its propositions to a larger field, because it is the only

[1] Zur Frage der primären Verrücktheit. Psych. Centralblatt, 1877, 10.

[2] As stated in my article on Monomania, elsewhere cited, I use this term as equivalent to the German "primäre Verrücktheit," the "partial lunacy" of some earlier English writers. I am fully aware of the etymological objections to the term, but as it is sanctioned by good use (Ray and the French writers), and as similar cavils may be made against other accepted terms in psychiatry, I have thought that in the absence of any other good equivalent for the German term, it would be best to use the one whose accepted meaning is nearer to the conception of "primäre Verrücktheit" than any other.

[3] A significant warning to the zealous gynæcologists who would remove delusions of an hysterical character and erotic monomania by Battey's operation.

theory harmonizing with the various factors, which a correct theory covering this field must take into account. If, on studying the various objections that may be advanced against it, the theory gains instead of losing in plausibility, it may be accepted as a safe guide in the study of the hereditary and congenital cases of insanity.

One objection may be based on the claim that if the mal-development of certain cortical fields, and of the fasciculi uniting them is to be considered the foundation of certain symptoms, then pathological destruction of cortical centres and of their associating fibres ought to be followed by corresponding results, which we know, however, not to be an ordinary consequence. This objection is faulty in two respects. In the first place, a destructive lesion generally produces only symptoms of subtraction, while the symptoms of insanity we are here considering are—however faulty—constructive and synthetic processes. In the second place, there is a great difference, clinically, between the effects of congenital and acquired lesions. I need but instance porencephaly, the deformity recently described by Kundrat,[1] and originally studied by Heschl: Where the porencephalic defect dates from infantile or fœtal life, imbecility is always present; but where it is developed in the matured brain, imbecility is not a necessary result.

There are in addition a few cases of acquired brain lesion, which present symptoms analogous to those found with the constitutional insanities. I need not refer to the profound weak-mindedness common with lesions of the occipital lobe, and resembling so closely the mental state of those patients in whom the corpus callosum is found absent, which is so remarkably out of proportion to the extent of the lesion. There is one important case on record which proves that acquired lesions involving the white

[1] Die Porencephalie, eine Anatomische Studie.

substance may produce disturbances of the *ego*-consciousness corresponding to those found with certain lunatics. Huppert reports finding a capillary hemorrhage and softening involving the posterior half of the Island of Reil, as well as the white substance of the lobulus tuberis, the medullary fasciculi intermediate to these places being destroyed, in a patient who had exhibited the phenomenon of double-consciousness dating from the time when the other symptoms indicating the cerebral lesion developed.[1] There are also several cases on record where traumatic causes led to the development of systemized delusions and other symptoms analogous to those interesting us here. It is fair to assume that the molecular shock here affected particular cerebral districts and their connections.

It will be also claimed that many cases of monomania (primaere Verruecktheit) are neither hereditary nor congenital, and that certain primordial deliria imitate the symptoms displayed by the hereditary and congenital lunatics, although anomalies of the cranial and cerebral configuration cannot be claimed for these by the author.

But such furibund symptoms as epileptic explosions are admittedly possible without a demonstrable anatomical aberration, and yet when we do find epileptic explosions of a certain type associated with a cortical lesion, we do not hesitate to attribute the symptoms to that lesion. So with the morbid projects, delusions and moral perversions of lunatics, they may be simply functional perversions of a properly built cerebral mechanism or the outcome of a visible structural defect. And when the latter is palpable, attributable to an error in development, and occurs with a certain constancy in similar cases, we are justified in assuming a fundamental relation between the defect and the essential nature of the symptoms, in view of the consistency

[1] Archiv. f. Psych., III.

of the theory with the facts of heredity, of incurability and of our psycho-physiological conceptions.

There is one anticipation which will arise in the minds of those who have carefully followed the conclusions here laid down, whose full realization constitutes a test of the correctness of these conclusions. It may be properly urged that if there are forms of insanity attributable to structural defect, forms of insanity whose symptoms are determined as to their general tenor by an originally faulty cerebral mechanism, that a secondary disturbance of that mechanism will act as unfavorably on the pre-existing mental state as it would on that of a normal individual; in other words, it is just to infer that an acquired lesion will disturb the abnormal ideation of the hereditary and congenital lunatic in a manner simulating the effect of the same lesion on the ideation of a sane person.

This anticipation as above stated is realized. It is well-known that paretic dementia may supervene on original imbecility as well as on original monomania. The advent of the complicating psychosis is marked by a deterioration of the systemized character of the fixed delusions, and as the disease progresses the original delusions and other prominent evidences of the previous mental state disappear, and are replaced by the ordinary unsystemized notions of an ambitious kind, which, if linked at all to the earlier delusions, have but an accidental connection with them. Such cases are described by Höstermann, and an excellently illustrative one has come under my own observation:

The case is that of D. W. J.—whom I observed during life, at the Ward's Island Asylum, and whose brain I obtained after his death. At the time when my attention was most closely directed to the patient he presented the physical signs of progressive paresis, and at the same time, morbid projects and delusions. While some of these, like his idea, that the superintendent was responsible for the introduction of vermin into

the institution, and that he was going to build an asylum with a school attached to it, in which the medical officers were to be properly instructed in mental science, notwithstanding the kernel of justification for the latter intention, were unquestionably true paretic notions, others were so elaborate and involved such an excellent memory and fertility of invention, that, without knowing his earlier history, I suspected that the paralytic insanity was engrafted as a foreign element on a pre-existing monomania. I would say here, that the patient had a fair recollection of some of the experiments of Magendie, a good knowledge of anatomy, was a fair logician and ready writer, even to the time when he could hardly enunciate words properly, and was unable to use his lower extremities. He all the while exhibited the characteristic symptoms of querulent monomania.

If the peculiar character of the patient's delusions alone justified the suspicion entertained by myself, that the paralytic insanity which terminated in his death was engrafted on a pre-existing mental disorder, it became established as a decided opinion on obtaining an account of his past history, through an article which appeared in one of the daily papers the day after his death. It read as follows:

"David Wemyss Jobson died of paralysis, on Friday last, in the Ward's Island Hospital for the Insane. He was about seventy years of age. His body was taken to the morgue yesterday, and if not claimed to-day the commissioners will inter it to-morrow in the Potter's Field on Hart's Island. Letters found among his effects show that he was born in Dundee, Scotland, of a family that had been land-holders for centuries. He graduated at the Edinburgh University in 1827, and studied both surgery and dentistry. About 1836 he settled in London, and obtained permission from King William IV. to call himself Surgeon Dentist to the King, and this permission was subsequently (also) accorded by Queen Victoria. A year or two after the Queen's accession he gave offence by espousing intemperately the cause of the Lady Flora Hastings, one of her maids of honor, who was afflicted with a form of dropsy, and was wrongfully said to be about to become a mother. The lady soon died, and an autopsy disproved the suspicion. In consequence of Jobson's partisanship, the permission to style himself Surgeon Dentist to the Queen was withdrawn, and he lost much practice among the aristocracy. His pecuniary fortunes declined, and he obtained a precarious support by writing for newspapers and

magazines. At times he was aided by remittances from his relatives in Scotland.

"At the outbreak of the French Revolution of 1848 he went to France and ingratiated himself with Lamartine and other members of the provisional government, and, without any military education, he managed, according to his own account, to obtain the honorary title of general. He returned to London, and about 1854 came to the United States, where he found an indifferent support by his pen. He became naturalized, but afterward made repeated voyages to England, and there he continued to write for the press.

"There are numerous letters among his papers from the secretaries of Prince Albert, Lord Palmerston, the Earl of Derby, Mr. Disraeli and others, thanking him politely for documents sent, but expressing inability to render them available for any purpose. Jobson was imprisoned for a night in London, and fined £50 for insulting Alderman Gibbs, while that official was acting as a magistrate.

"On another occasion Recorder Russel Gurney sentenced him to hard labor in the Bridewell for libeling Sir James Ingram. Sir Edward Thornton, the British Minister at Washington, was repeatedly written to by Jobson, with reference to panaceas for quelling the troubles in Ireland, and Jobson received several polite letters from him declining to act upon his suggestions.

"In 1858, a Mr. Ira D. Jobson, of 2 Paton's Lane, Perth Road, Dundee, Scotland, wrote that his uncle had died, leaving him and his brothers about £40 apiece, but that David's name was not mentioned in the will. The bulk of the property, he said, had been left to the poor relations of the Earl of Camperdown. This took Jobson to England, and among his papers is the copy of a memorial which he sent to the Lord Chancellor, in 1859, announcing his return from America to claim a heritage of 15,000 acres of land that had been in his family for centuries, and also £26,000 that had been left by his uncle chiefly to Sir James Ferguson, nephew of Lord Camperdown, who had married his (Jobson's) niece. He complained, also, that he had been placed in a lunatic asylum by Sir James Ferguson's machinations.[1]

[1] This fact was not known while the patient lived at the Ward's Island Asylum. It must refer to a period anterior to 1859, and to a sojourn in an English Asylum, possibly brought about by some extravagant action of the patient. If a record of such sojourn exists and meets the eye of any reader of this article, information thereof will be appreciated by the writer.

"Having been unsuccessful in his application, Jobson returned to America. His career here is well known. He wrote casually for newspapers, received casual remittances of £1 at a time from Mr. Ira D. Jobson, and obtained credit where he could for clothing. In the winter of 1874–'75, he became ragged and almost bare-footed, and in March last he was taken to the asylum at Ward's Island, more out of pity than on account of any danger occurring to the public from his harmless insanity."

Subsequently I was informed by Ex-Judge Joseph Koch that while the latter acted as police magistrate Jobson frequently annoyed him by bringing complaints against the British government, and certain city officials who had dealt with him unjustly in reference to a public candidacy. Be it known that this patient had had himself nominated for the comptrollership of this city, by an ephemeral organization, and had actually received a number of votes in the ensuing election. It was also evident from his own account that he had been engaged in a riotous movement in Australia, and been imprisoned a year there in consequence.

While during the earlier periods of his asylum sojourn he enunciated his systemized delusions of having been defrauded of the comptrollership, and wrote the average kind of newspaper poetry, complaining of the machinations of the British government against himself, and on the other hand alleging the existence of conspiracies against that very government, these elaborate notions were less distinctly announced, and most of them even forgotten, some months before his death, when with marked emotional tremor and imperfect tongue he stuttered forth the wildest and most inconsistent ideas of aggrandizement, mingled with complaints about the vermin alluded to, and which evidently depended on the hyperæsthesia and paræsthesia which constituted marked features of the physical part of his symptoms. The autopsy revealed marked cystic degeneration of the cortex of the paracentral lobule and of the inner face of the frontal lobe, adhesion of the pia over the central gyri and superior parietal lobule; extensive atheromatous degeneration of the arteries, both of the great trunks and the primary and secondary branches; atrophy, fatty, granular and sclerotic degeneration of the cortical nerve cells, as well as similar and more intense changes in the cells of the lower cranial nerve nuclei and of the anterior spinal cornua. There was no deviation from the normal convolutional type as such, but I have never seen the transverse corrugations of the gyri as pronounced in any human brain as in this one; the skull was moderately

stenotic; the pons and oblongata, the latter particularly, were unusually small, but this could be referred to the diffuse sclerosis and atrophy, of which these parts were the seat.

An analogous case is that of a Doctor P——e, whom I observed at the same institution, and in whose case there was, about thirty years ago, a history of erotic monomania from which he emerged with the systemized and well-defended delusion that he was King George the Fourth. During the time I observed him he gradually developed all the physical signs of paralytic dementia, even to its trophic disturbances, but though hardly able to articulate and unable to defend his delusion, he still held to his royalty, and insisted on the honors due the latter in a vague and unintelligent way. [1]

One of the strongest arguments in support of the view which refers the hereditary and congenital constitutional insanities to anatomical defects is furnished by the great analogy existing between the transmission of these insanities and the known phenomena of inheritance studied by zoölogists. Some of the resemblances have been already referred to; a most important one is the frequent intensification of the malady as well as of the anatomical defects. A father, for example, is merely morbidly eccentric, and presents no cranial anomaly indicating an anatomical mal-development. His child, however, becomes an original monomaniac, and has asymmetry of the cranium and defects of innervation, indicating such mal-development. In another instance, a monomaniac of very good education and marked ability in many directions, who is now out of the asylum and engaged in chemical experimentation and the occasional

[1] Such cases may lead to considerable doubt in diagnosis. It must be recollected that there are often congenital differences in the innervation of the two sides of the face in monomania, on the one hand, and on the other, that in the early stages of paralytic insanity with an hereditary basis, or engrafted on monomania, we may find systemized delusions, well defended, or even skillful dissimulation.

issue of insane pamphlets, had an idiotic daughter, with a deformed cranium and strabismus, who died early with convulsions. It must be admitted that such cases strongly support the suspicion that the anomaly visible in the descendant pre-existed in the parent in so slight a degree that it remained impalpable to our imperfect methods of examination. In the light of what we actually find in some of the subjects forming the group of the insane here considered, we are justified in stating that the cranial and related cerebral asymmetries or deformities, the convolutional anomalies, the disproportions of the great ganglia and the defects in the great commissures, constitute the basis of the disharmony in their mental life, their faulty logic and their erroneous perceptions. We are further justified in indicating the line of research necessitated by the palpable and suggestive physical evidences in the "grosser" cases as the one most likely to lead to reliable findings in the study of those "less intense" cases for which, so far, no explanation on somatic grounds has been offered.

It has been not inaptly said that the mental co-ordinations acquired in the course of a higher civilization are the ones which are most likely to be defective in the constitutional lunatic. It may be presumed that the sub-cortical nerve-tracts which are the latest in attaining their full development, and which indeed have not attained that development at birth, are the essential mediators of those intricate co-ordinations. As we proceed from the lower mammalia to the higher, and as we follow up the successive stages of the human embryo and fœtus, we find that the isolation of conducting tracts and the related overgrowth and emancipation of the associating systems appears to be the ideal aim of the highest development.

What more imperative conclusion is there in the entire domain of mental science than that the source of the

complex disturbances of the mind, manifesting an hereditary or congenital taint, must be sought for right here?

In the foregoing, little account has been taken of histological *changes*, except in so far as it was found necessary to show that these were not and could not be the primary etiological factors of the "original" forms of insanity. It is proper to assert before leaving the subject that these lesions nevertheless constitute an important subject for study.

Unfortunately, the numerous registrations of such lesions to be found in the earlier literature of the subject fall, in great part, under the criticism expressed in the introductory chapter[1]; while modern observations are not yet sufficiently numerous to justify the drawing of positive conclusions. Some uniform method of preparing cerebral tissues for microscopic examination should be adopted at all asylum laboratories; for even in this day it must be confessed that the variability and inconstancy of pathological findings in the chronic insane are in some degree due to the difference in the technical manipulations resorted to[2] by investigators.

Another difficulty encountered is that, in order to make a correct pathological record of an insane brain, it is essential to examine specimens from every portion of the organ; while we rarely have that guide to selection of the particularly affected districts, which is furnished by the naked eye survey of brains showing other diseases.

I have already stated[3] that many of the more delicate changes of the cerebral blood vessels are to some extent

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[1] Pp. 10–12.

[2] *Newth* has fully recognized and discussed this point, and his suggestions are eminently deserving of attention.—*Journal of Psychological Medicine*, 1877.

[3] P. 11.

found in the ordinary brain ; only when such changes reach the extreme degree which we find in those with whom insanity has lasted for years can we consider them as pathological marks of mental disorder, and as related to the terminal symptoms. If the slight granular condition of the blood-vessels, and the accumulations of cellular elements and hæmatozin near them in the sane, may be considered as the legitimate results of the physiological activity of the brain, and when they pass a certain limit, at a certain age, as the signs of a natural senile involution, it is as fair to correlate the extreme granular degeneration of the blood-vessels, the more extensive accumulations of effete products, such as granular material, metamorphosed coloring matter of the blood, and above all, extensive and numerous extravasations with their residua in the insane brain, with the terminal mental condition ; to attribute them to functional abuse of the nutritive apparatus of certain regions ; and to view them as Schuele[1] regards the co-existing changes of the nerve elements themselves, as signs of a pre-senile involution.

It is remarkable how in cases of primary monomania of long-standing, large areas of the cortex and the white substance retain the normal characters, while almost side by side are found other areas presenting changes of the nerve elements and blood-vessels far exceeding in degree those which can be admitted to be normal. The question naturally arises : can we infer from this that mal-associated centres and their subsidiary tracts undergo a passive degeneration, or are we to consider these changes as due to the abnormally excessive concentration of the mental energies in special realms of thought and action, and a consequent unhealthy over-stimulation of their districts ? Thus far we are only able to answer this question with the aid of inferences to be drawn from clinical observations ; and these furnish us

[1] Ziemmsen's Cyclopædia.

with two groups of facts. The first consists of the frequent observation of hallucinations harmonizing with the morbid ideation of the "constitutional" lunatics; now hallucinations can be regarded only as memories, owing their life-like intensity to the excessive irritation of the cortical fields where those memories are registered.[1] This interpretation is not altered by the fact that the hallucination often consists of subjective perceptions which have not been registered by the memory; for in such cases they can be always discovered (like dreams) to be constructed and combined from previously registered impressions. This category of facts is hence favorable to the theory that functional over-stimulation is responsible for the regional changes found in primary monomania. The second group of facts consists in the observation of undoubted cases of monomania, secondary to either the simple psychoses, such as primary mania and melancholia, to traumatism, to intense emotional shock, and to the essential fevers. Circulatory disturbances are common in the simpler psychoses, if they are not their chief etiological features; and the results of direct (mania) and partial collateral hyperæmia (melancholia) may be properly considered as more intensified in the areas subservient to the most prominent mental perversions manifested by these patients than in any other areas. But it is precisely the most prominent perversion of a given acute psychosis which furnishes the substratum for the systemized ideation marking the secondary monomania which here grows out of the primary disorder.

Our observations regarding systemized insanity following traumatism are yet very meagre, but in one case of this kind—that of a patient named D——e, who had sustained an extensive depressed fracture of the left frontal bone[2]

[1] See concluding chapter.

[2] On the inner face the smooth surface of the projecting bone was moulded

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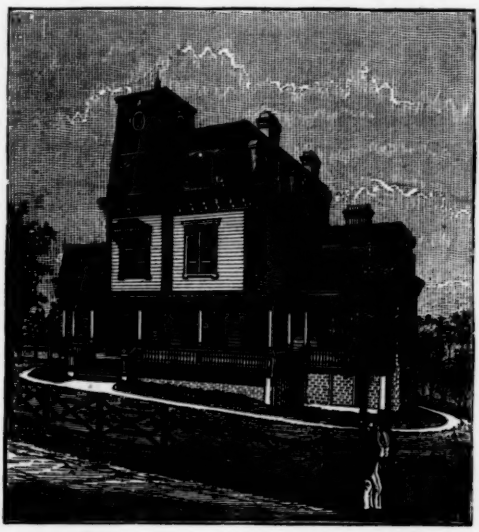

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VIII. Items of interest, personal notices and editorial comments.

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A limited number of reprints will be furnished to authors of larger articles, if the request accompanies the manuscript.

TO THE MEDICAL PROFESSION

LACTOPEPTINE

DEMONSTRATED SUPERIORITY OF LACTOPEPTINE AS A DIGESTIVE AGENT.

Certificate of Composition and Properties of Lactopeptine by Prof. ATTFIELD, Ph. D., F. R. S., F. I. C., F. C. S., Prof. of Practical Chemistry to the Pharmaceutical Society of Great Britain.

LONDON, May 9, 1882.

Lactopeptine having been prescribed for some of my friends during the past five years—apparently with very satisfactory results—its formula, which is stated on the bottles, and its general characters, have become well known to me. But recently the manufacturer of this article has asked me to witness its preparation on a large scale, to take samples of its ingredients from large bulks and examine them, and also mix them myself, and to prepare *Lactopeptine* from ingredients made under my own direction, doing all this with the object of certifying that *Lactopeptine* is what its makers profess it to be, and that its ingredients are in quality the best that can be obtained. This I have done, and I now report that the almost inodorous and tasteless pulverulent substance termed *Lactopeptine* is a mixture of the three chief agents which enable ourselves and all animals to digest food. That is to say, *Lactopeptine* is a skillfully prepared combination of meat-converting, fat-converting and starch-converting materials, acidified with those small proportions of acids that are always present in the healthy stomach, all being disseminated in an appropriate vehicle, namely, powdered sugar of milk. The acids used at the factory—lactic and hydrochloric—are the best to be met with, and are perfectly combined to form a permanent preparation; the milk sugar is absolutely pure; the powder known as "diastase" or starch-digesting (bread, potato and pastry-digesting) material, as well as the "pancreatin," or fat-digesting ingredients, are as good as any I can prepare; while the pepsin is much superior to that ordinarily used in medicine. Indeed, as regards this chief ingredient, pepsin, I have only met with one European or American specimen equal to that made and used by the manufacturer of *Lactopeptine*. A perfectly parallel series of experiments showed that any given weight of acidified pepsin, alone at first acts somewhat more rapidly than *Lactopeptine* containing the same weight of the same pepsin. Sooner or later, however, the action of the *Lactopeptine* overtakes and outstrips that of pepsin alone due, no doubt, to the meat-digesting as well as the fat-digesting power of the pancreatin contained in the *Lactopeptine*. My conclusion is that *Lactopeptine* is a most valuable digesting agent, and superior to pepsin alone.

JOHN ATTFIELD.

LACTOPEPTINE contains all the agents of digestion that act upon food, from mastication to its conversion into chyle, thus combining all the principles required to promote a Healthy Digestion.

One of its chief features (and the one which has gained it a preference over all digestive preparations) is that it precisely represents in composition the natural digestive juices of the stomach, pancreas and salivary glands, and will, therefore, readily dissolve all foods necessary to the recuperation of the human organism.

FORMULA OF LACTOPEPTINE.

Sugar of Milk	40 ounces.	Veg. Ptyalin or Diastase	4 drachms.
Pepsin	8 ounces.	Lactic Acid	5 fl. drachms.
Pancreatine	6 ounces.	Hydrochloric Acid	5 fl. drachms.

LACTOPEPTINE is sold entirely by Physicians' Prescriptions, and its almost universal adoption by physicians is the strongest guarantee we can give that its therapeutic value has been most thoroughly established.

The undersigned having tested LACTOPEPTINE, recommend it to the profession:

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For further particulars concerning Lactopeptine, the attention of the Profession is respectfully directed to our 32-page Pamphlet, which will be sent on application.

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